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COMPUTERWORLD

IS group forms to compare processes

By Thomas Hoffman

Seeking to retain their competitive edge, a group of 30 global corporations have quietly handed together to benchmark key information systems functions against one another.

Called the Benchmark Consortium, the group hopes to achieve higher quality and improved productivity of systems and processes by sharing and comparing their successes and failures.

The companies involved in the project — including American Express Co., Federal Express Corp., Union Pacific Railroad, United Services Automobile Association and Northern Telecom, Inc. — have enlisted IBM's Consulting Group to handle the benchmarking.

Initially, the consortium will examine the best ways to approach information technology transformation, as companies try to more effectively align their legacy systems with new technologies such as client/server computing, according to Patti Prairie, a consulting director at IBM Consulting.

The benchmarking will include analysis of participants' existing data, combined with interviews and surveys of company executives, managers and end users who are involved with legacy systems. IBM Consulting will then devise a set of metrics to determine which companies have the best practices in place, based on whether the systems are meeting corporate strategies and cost and quality objectives.

Fedex's Dennis Jones *uses benchmarking to gauge progress*

But the benchmarking analyses will be more than quantitative, Prairie said. "When these companies benchmarked before, they tended to look at things from a cost perspective," she said.

The Benchmark Consortium, she added, will include the comparison of participants' management processes. Prairie said the consortium will hold a legacy systems benchmark symposium in the fourth quarter to release and

IS group, *page 16*

Novell eyes apps

Blueprint expected to cut development time up to 90%

By Elisabeth Horwitt
NEW YORK

■ Users briefed by Novell, Inc. about its embryonic development platform said they are excited by the possibility that it could slash network application development time by as much as 90% — key for companies hoping to reap competitive advantages from technology.

Novell's AppWare is a fledgling middleware platform that will allow developers to write applications across heterogeneous server and client systems without having to worry about the underlying complexities and incompatibilities, according to Novell (see story page 8).

Tempering users' enthusiasm, however, were concerns that AppWare will be just one more "marketecture" that will take years to begin meeting Novell's highfalutin promises.

And despite Novell's vow that AppWare will reach out to a variety of services across multiple client and operating system platforms, it is less clear how open the blueprint will be to competing servers, such as LAN Manager and Banyan Systems, Inc.'s Vines.

Sara Lee's Paul Bandrowski *cites competitive advantages*

In response, Novell spokespeople were quick to point out that the vendor and its partners have spent 120 engineering worker-years on the architecture since 1985. However, they contributed to users' wariness by refusing to provide any time frame for extending the platform beyond Novell and Unix System Laboratories, Inc. environments to other popular network service systems.

Likely but not definite initial candidates are Microsoft Corp.'s NT Directory Service and Apple Computer, Inc.'s Open Collaborative Environment, said Willie Teja-

Novell, *page 8*

NetWare, UnixWare to blend

Novell plans to integrate NetWare with subsidiary USL's UnixWare and is expected to announce partners and overall technologies for doing so in September, industry sources said last week. A developer's kit could ship next year, although specifics on the exact timing have not been finalized. USL/Novell engineer Bill Sherman refused to comment specifically but said Novell intends to pull the two environments together. Integrating the two systems could trigger a battle with Microsoft for share in the Unix desktop market (see story page 15).

—Melinda-Carol Ballou

IBM, Apple press for object-oriented payoff

Objects pull OS/2, Taligent onto AS/400

By Craig Stedman
ROCHESTER, MINN.

IBM plans to add its promised WorkPlace OS operating system microkernel into PowerPC-based versions of the Application System/400, due in 1995. This would enable them to run programs written for Taligent's object-oriented environment and other platforms.

With the AS/400 facing stalled revenue growth and increasing competition from Unix systems and potentially IBM PCs (see story page 14), the Mach-derived WorkPlace OS technology is the cornerstone of IBM's strategy for both opening up the AS/400 and adding

OS/2, *page 10*

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More than half of the 198 information systems professionals surveyed this year by the Object Management Group currently use object technology and wish it would move forward more quickly.

Taligent pushed to make early contribution

By James Daly

■ In the wake of executive shufflings and anticipated budgetary cuts, managers at Apple Computer, Inc. and its equally restless partner, IBM, are reportedly pressing their Taligent joint venture to deliver more quickly on its object-oriented charter.

While competitors Microsoft Corp. and Novell, Inc. each race forward with their own next-generation operating system plans, Taligent has been fairly quiet. Industry observers said there is a sense that Taligent needs to start contributing to ongoing projects such as Apple's System 7.0, especially with the research and development cutbacks expected from newly appointed Apple Chief Executive Officer Michael Spindler.

"Taligent's parents don't have infinite pocketbooks anymore," said Frank Dzubeck, president of Communications Network Architects, Inc., a consulting firm in Washington, D.C. "When you get closer to the delivery points, you've got to produce."

A source close to Taligent said the company may be entering a "make or break" period, after allegedly missing some internal deadlines. Under

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■ Legent plans to integrate a tool for software distribution into its product for application software management and file transfer. *Page 6*

■ Users will have a chance to make changes to the COSE specification for a common Unix desktop delivered in draft last week to X/Open. *Page 6*

■ Novell unveils its AppWare architecture, designed to ease the process of developing and distributing applications across heterogeneous networking environments. *Page 8*

■ Users of SunOS 4.X win assistance with the difficult migration to Solaris 2.X. Sunsoft bows to pressure and provides migration software and services. *Page 10*

■ IBM says details on its plans to improve the file and database server capabilities of its AS/400 will be available in September. *Page 10*

■ Apple gives attendees of Macfivity '93 a sneak peek at its Apple Open Collaborative Environment extension to System 7.0, a set of APIs that promise to tie together applications running under that operating system and provide groupware-like capabilities. *Page 12*

■ Five leading PC software vendors collaborate on building a cross-platform architecture for the next generation of object-oriented operating systems. *Page 12*

ADVANCED TECHNOLOGY

■ Fractal geometry may hold the key to data compression. Applications have recently been developed using fractal equations as a kind of shorthand to identify the contents of complex images. *Page 28*

Stu Mentzel of the U.S. Customs Service spearheaded development of the agency's newest foil for smugglers: a sophisticated imaging system. *Page 65*

DESKTOP COMPUTING

■ Providing seamless access to corporate data for remote users is becoming a top priority for IS. *Page 37*

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■ Client/server products are cropping up for finance, human resources and manufacturing, but many still need work. *Page 45*

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■ Novell is set to introduce two affordable LAN internetworking products. *Page 51*

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■ DEC customers aren't about to bet the farm on Alpha. Surveys show they'd rather let someone else make the first move from VAX. *Page 55*

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■ "If you don't see it, ask" is a good rule of thumb in terms of LAN service options. Many providers will customize their offerings. *Page 81*

COMPUTER INDUSTRY

■ IQ Software isn't exactly a household name; its report writer is frequently private labeled. Still, revenue for its first fiscal quarter of 1993 earned IQ a place on *BusinessWeek*'s list of the 100 hottest growth companies. *Page 89*

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Executive Briefing

Desktop competition heats up with definite word that Novell plans to integrate its NetWare network operating system with its USL subsidiary's UnixWare. This puts Novell on a collision course with Microsoft. Last week, Bill Gates told a PC Expo audience that Windows NT is the best Unix on the market. *Page 1*. **In the meantime, reports are surfacing that Apple and IBM are leaning on their joint venture, Taligent, to begin delivery on its object-oriented promises.** *Page 1*

Users weigh in with some concerns about the NetWare/UnixWare juggernaut, even before the planned integration of those two operating systems. Some who attended a Novell briefing about its new and supposedly open middleware platform, AppWare, are expressing concern about just how open the scheme will be to other network service systems. *Pages 1 and 8*. Users will also get a chance to air their feelings and reportedly influence the final version of a draft COSE specification for a common Unix desktop. User feedback will be solicited at an open meeting of X/Open's Desktop User Requirements Group next week. *Page 6*

Mobile computing is becoming more connected. A new protocol for wireless LANs from Xircom, Inc. could give mobile PC users the option of forming ad hoc, peer-to-peer networks with other mobile types, as well as the ability to connect with their in-office LANs. *Page 14*. Is there a point when connection begins to feel like a too-tight leash? Networking senior editor Joanie M. Wexler says it may be time for the wireless industry to start thinking about usage guidelines to go with the technology. *Page 51*.

Object technology is picking up steam. Even if Taligent hasn't released its long-awaited product, bits and pieces are emerging from Apple and IBM. Apple's OpenDoc platform uses "chunks" of Taligent technology. *Page 12*. IBM is also reported to be using Taligent technology in a PowerPC-based AS/400 platform. Its promised WorkPlace OS microkernel will be incorporated into PowerPC-based versions of the AS/400, due in 1995, enabling users to run programs written for Taligent's object-oriented environment and others. *Page 1*. Developers are starting to move with more confidence in object-oriented environments. *Page 61*

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Network management

GE will take OpenView of global net

By Joanie M. Wexler
FAIRFIELD, CONN.

In a sweeping attempt to gain a common, global view of what are mere islands of managed networks today, General Electric Co. last week said it has standardized corporatewide on Hewlett-Packard Co.'s OpenView platform.

The decision was based on a team review by key internetworking managers from each of GE's 12 business units, said William Taliaferro, program manager at GE's corporate technology management group.

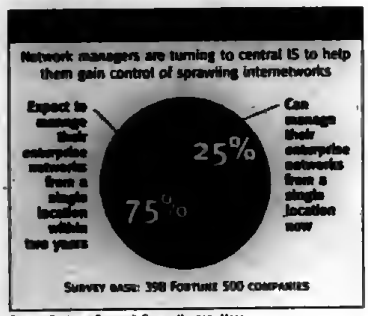
The move represents one of corporate America's early commitments to expand beyond pockets of departmental or business unit management systems into a cooperative effort spanning a global enterprise — in GE's case, nearly 26,000 networked nodes.

OpenView is HP's Unix-based platform for integrating task-specific network management applications from various vendors. GE has already begun implementing the system in about a half-dozen sites. Taliaferro said he expects OpenView to span most of the global firm's Cisco Systems, Inc. router-based internetwork within two years.

The CiscoWorks management application for OpenView, which manages Cisco routers, is thus likely to be one application that GE will run atop OpenView.

Taliaferro said GE based the OpenView decision largely on its status as the Open Software Foundation's Distributed Management Environment standard.

The OpenView rollout is one result of a GE decision to pool control of the local-area networks springing up willy-nilly throughout far-flung sites [CW, Jan. 13, 1992]. OpenView will help deliver better network services and uptime by seeing the whole network picture.



Source: Business Research Group, Newton, Mass.

often span beyond a single network, he said.

The HP OpenView move will enhance the company's ability to communicate on "an even keel" in differing regions of the world running multiple platforms, said Curt L. Kemmerer, manager of information systems at GE Wiring Devices, a business unit in Warwick, R.I.

Currently, GE runs some enterprise systems, such as Sun Microsystems, Inc.'s SunNet Manager, but they do not cross business boundaries, Taliaferro said.

This scenario is common today in the Fortune 500, said Cheryl Ball, a senior industry analyst at Business Research Group, a consulting firm in Newton, Mass. She said this is because LANs have grown up piecemeal and their accompanying management systems have emerged accordingly.

Now that networks are becoming the foundation for corporate computing environments, LAN managers are returning to central IS departments for consolidated management (see chart). However, the integration of the myriad management tools that IS needs to do the job is in its infancy, Taliaferro said.

Taliaferro said IBM's NetView for Systems Network Architecture networks and OpenView will soon "share alerts and management processes." However, he declined to comment on specific IBM integration plans or HP's intention to support telecom applications.

Off and running

HP's aggressive OpenView partnership program has led Ball to believe that HP will hook into the telecommunications side of the house, though. For example, HP recently teamed with Unix-based network management vendors IBM, Sun and SynOptics Communications, Inc. to spur applications that run across the three companies' platforms [CW, June 14]. One goal is to integrate telecommunications applications as well.

Meanwhile, a corporate telecommunications group at GE is embarking on a network utility project to consolidate business unit network connections so GE can reap economy-of-scale dividends.

The group, which will purchase, install and manage internetworking equipment, will run OpenView for tracking traffic patterns so it can install appropriate-speed wide-area links.

Kick off

GE's internetwork backbone consists of multiple platforms and myriad communications protocols. The company plans to kick off its integrated network management effort of these environments by globally deploying HP OpenView Network Node Manager, an application that allows system administrators to discover, monitor and control networks from a single workstation.

Notably absent in OpenView and other integrated management systems today, however, is the capability to pull in a coordinated view of telecommunications equipment. "There is no enterprise system fully functional today," said William Taliaferro, a program manager at GE.

Analysts predict more IBM layoffs in offing

Total loss of jobs could reach 70,000 by year's end; Gerstner mulls next move

By Johanna Ambrosio

By the end of the year, IBM could well be 70,000 employees smaller, some analysts said last week.

IBM said earlier this year that it would eliminate 25,000 positions in 1993 through retirement programs and layoffs, but that number is now expected to be much higher.

Last week, IBM spokesmen declined to comment on analysts' figures. But one IBM staff member said, "We've known for several months that the original 25,000 would be higher, but we don't know by how much more."

Although some of those people were laid off, primarily from plants in the Hudson Valley in New York, most of the employees who are leaving are doing so voluntarily through programs that expired June 30. As of last week, IBM spokesmen said, the final tally was not available.

IBM stocks

If IBM does cut more jobs this year, as expected, total employment by year's end will be around 270,000 vs. a 1986 high of 405,000.

Last year, IBM took a $5.4 billion charge to cut 40,000 jobs and reduce physical assets around the world, including shutting parts of some plants.

Late last year, IBM plunged its net development spending and administrative overhead by $6 billion and this year.

Further, the IBM source added, new IBM Chairman Louis V. Gerstner may well decide to cut even deeper as he and his new team analyze the different parts of IBM and come to decisions about priorities. No decisions have yet been made, he said.

Others, however, said the original estimate of 25,000 is way too low. "My prediction is that by the end of 1993, there will be a minimum of 70,000 less people in IBM," said Sam Albert, a consultant in Scarsdale, N.Y.

Robert Puffer, an analyst at Gartner Group, Inc. in Stamford, Conn., said, "We've heard numbers as high as 72,000." For customers, this means that it will probably be 1995 before the sales, support and marketing forces are stabilized, he added.

In the meantime, Gerstner has begun seeking the counsel of industry analysts and consultants. Typically the meetings last about half an hour, with Gerstner asking questions about IBM's perceived strengths and weaknesses and taking notes on the responses. At least a half-dozen such meetings have taken place.

"He is very much still in learning mode, as can be expected," said one meeting participant who, like the others, was asked not to talk about it. "He's only been in the job about two months, so it would be premature to expect any decisions."

Some observers say they expect Gerstner to slowly unveil pieces of his new strategy over the next six months or so.

"His actions so far give us some clues about what he might be thinking," said Bob Djurdjevic, president of Annex Research in Phoenix, referring to Gerstner's naming a chief financial officer with experience in cutting corporate fat. "Restructuring assets is one of them."

Corrections

- Because of an editing error, a story in the June 28 issue incorrectly cited Stratus Computer, Inc.'s commitment to offer 99.999% availability on its fault-tolerant systems in the next few years.
- Because of an editing error, a column in the June 14 issue incorrectly identified Software Emancipation Technology, Inc. in Waltham, Mass.
- A chart on mobile workers on page 98 of the June 28 issue should have been attributed to The Yankee Group in Boston.
- Jim Odell, chief methodologist at Intellicorp., was misidentified in a column in the June 28 issue.

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News Shorts

ICC/Comdisco suit takes a turn

The initial round of the 2-year-old lawsuit filed by IBM Credit Corp. (ICC) against Comdisco, Inc. ended in a split decision last week. The Superior Court of Delaware ruled in IBM's favor on two counts, granting a summary judgment to IBM and other IBM-aligned parties and said that the rest of the case will go to a jury trial. The lawsuit claims Comdisco's reconfiguration and remarketing of IBM computers violates ICC's master lease agreement, charges which Comdisco refutes. Both sides claimed victory.

Judge affirms spreadsheet ruling

The copyright saga of Lotus Development Corp. vs. Borland International, Inc. continued last week as the Federal District Court in Boston reaffirmed an opinion issued earlier this year that the command structure of the 1-2-3 menus can be copyrighted. A Lotus spokesman said the court has set up an August conference to hear any further issues. Next up: Lotus must declare what it wants in damages. Borland, meanwhile, continues to maintain that the copyright issue will ultimately be decided in an appeals court because "there's been a number of court decisions that seem to contradict what has happened in this court."

Oracle readies development templates

Oracle Corp. plans to augment its computer-aided software engineering (CASE) line this month with templates targeting vertical industries that give utilities, financial firms and other kinds of companies a head start on building applications. Oracle Industries products will be packaged with consulting services from Oracle and third-party providers. Separately, Oracle announced pricing for its 14-tool CASE suite: $100 to $18,000 per user per tool, depending on platform and type of license.

Novell to buy full-motion video maker

As expected, Novell, Inc. has reached an agreement to aquire Fluent, Inc., a Natick, Mass.-based vendor of software for integrating full-motion video into desktop applications [CW, June 14]. Details of the deal, which has a reported purchase price of $17.5 million, are expected to be announced this week, according to Ames Abbot, Fluent's director of channel marketing.

ATM scammers arrested

Federal authorities arrested two men who were suspected of setting up a bogus automated teller machine in a Connecticut shopping mall and allegedly bilking victims for more than $100,000. Federal officials arrested Alan Scott Pace, a 30-year-old computer specialist, and Gerald Harvey Greenfield, 50, both from Tucson, Ariz. They face fines of more than $250,000 and prison terms ranging from 10 to 30 years on each of four counts.

SHORT TAKES President Clinton last week nominated Washington, D.C., antitrust lawyer and former Yale University Law School classmate Reed E. Hundt to head the Federal Communications Commission. ... Commerce Secretary Ron Brown is expected to go to the well of high-tech executives and tap David Barram, Apple Computer, Inc.'s vice president of worldwide corporate affairs, to be the department's deputy secretary. ... Sun Microsystems, Inc. is expected to break out a service and support independent business unit tomorrow that will handle its own and non-Sun gear. Larry Hambley, Sun Microsystems Computer Corp. marketing vice president, will oversee the unit.

News shorts, *page 16*

Legent extends management

By Gary H. Anthes

VIENNA, VA

Legent Corp. last week formally unveiled a software distribution product that it plans to integrate into its products for application software management and file transfer. The company also said it will expand the scope of distribution management to include software asset management and backup and recovery.

Components of the software distribution tool, called DistribuLink, reside on mainframes, workstations and local-area network servers. Working together, the components prepare packages of software and data for distribution, store the packages on a central warehouse, send them electronically to remote sites, install them automatically at specified times and verify the installations.

DistribuLink can perform multitiered distribution — from central host to departmental server to desktop — or can be linked with Novell, Inc.'s Network Navigator, which will move the software over the LAN to desktops.

The DistribuLink server runs on an MVS host, accessible by an OS/2 administrator's workstation via a graphical user interface. Support for Windows access will be available later this year.

Distribution can be made to target machines running DOS, OS/2, Windows, MVS, VAX/VMS and Unix systems from IBM, Hewlett-Packard Co. and Sun Microsystems, Inc. IBM's Systems Network Architecture, LU6.2 and Transmission Control Protocol/Internet Protocol are supported.

Steve Mallion, manager of technical and development support at Royal Bank of Canada in Toronto, said the bank evaluated all the major distribution products before settling on DistribuLink. He said a key requirement was the ability to send different files of financial data to each of some 2,000 bank locations every day, a job he said is much more difficult than broadcasting software updates, which tend to be the same to every site.

DistribuLink components

Legent's DistribuLink server has four major components:

- **Warehouse Manager** — allows software files to be identified, grouped and stored as "product" groups.
- **Profiler** — defines target machines as "persons," "machines" or "groups" of persons or machines.
- **Scheduler** — allows unattended distribution to any target at any date and time.
- **InSure** — centrally logs results of distribution and includes automatic error-recovery and checkpoint/restart.

"DistribuLink best suited our needs," Mallioo said. "But I'll be quite honest — it fell way short of what our full needs are. We want to be able to manage the whole software change process, which ends with performing distribution into a production network."

To meet those needs, the bank is working with Legent to build automated links between DistribuLink and Legent's Endevor family of application software management products. Mallino said the bank has 40 software "change teams," which bring all software updates together in a common source-management system using Endevor. He said Legent is developing the "glue code" that will automatically take those changes and move them out to target machines in an easy, error-proof way.

"Legent has done an especially good job with heterogeneous client support," said Patrick McBride, program director at Meta Group, Inc. in Westport, Conn.

But McBride said Legent will also have to carry through with its plans to link distribution to asset management. With shrink-wrapped software particularly, software distribution needs to be able to access a software inventory containing data such as license terms, he said.

The bridge between DistribuLink and asset management software is expected to be developed within six months, Legent said.

Users to give feedback on open desktop specification

By Jean S. Bozman

Users may have the final say on the very first Common Open Software Environment (COSE) specification for a common Unix desktop, which was delivered to the X/Open Co. last week.

COSE group members IBM, Hewlett-Packard Co., SunSoft, Inc. and Unix System Laboratories, Inc. (USL), all members of COSE's working group to develop a Common Desktop Environment (CDE), last week electronically delivered a draft of the common desktop specifications to X/Open. That draft will be available to the public in printed form this week.

But some observers said they believe COSE members may have spoken too soon about meeting their June 30 deadline, as the printed specifications will not be out until Wednesday.

"They didn't quite meet the deadline," said Dave Smith, director of advanced operating environments research at International Data Corp. in Framingham, Mass. "It's a nit, since I haven't really seen it. But the [COSE] white paper is not a spec — that doesn't qualify. When I see the spec, I can comment more on what it really says," Smith said.

However, he added that it is realistic to expect that the integration of COSE vendors' software to create a common Unix desktop could be done in 1994.

User feedback

X/Open said the next step will be to ask for user feedback on the draft specification at an open meeting of X/Open's Desktop User Requirements Group on July 12 in San Francisco.

A CDE developer's conference is now scheduled for San Jose, Calif., starting Oct. 26.

"The user group is going to look at this functional specification and compare it against user surveys for the last four years," said Mike Lambert, chief technology officer at X/Open. "We will flag any major discrepancies." However, if users at the meeting ask for any changes, he said, "I would expect the [COSE] development team to listen very carefully."

Key elements of the COSE draft specifications include HP's Visual User Environment desktop, IBM's Common User Access shell, the Open Software Foundation's Motif graphical user interface, SunSoft's ToolTalk, which is a part of an object-oriented development kit, and Novell, Inc. subsidiary USL's Unix System V Release 4.2 desktop manager components.

COSE members still have a lot of work to do before the common Unix desktop comes to market.

Bill Filip, president of IBM's Advanced Workstations and Systems unit, said about 80% of the code exists. "There's a lot of integration to do to make this a very smooth, transparent environment," he said.

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Novell greases app development process

By Elisabeth Horwitt
NEW YORK

Novell, Inc. last week unwrapped its blueprint for alleviating the pain of developing applications for heterogeneous networking environments, cutting costs and speeding up software delivery in the process.

The AppWare architecture contains application programming interfaces and software building blocks said to shield developers from the complexities of the underlying system, which in the case of corporate networks is a proliferating mess of network transport protocols, client operating systems and graphical user interfaces (GUI). Novell is cobbling it together out of technologies from acquired or partially acquired companies: Software Transformation, Inc., Serius Corp. and Hyperdesk Corp.

AppWare will also relieve developers of the need to write multiple ports of the same application, according to Matthew Miller, director of product marketing at Gupta Corp. Miller, who has seen early versions of AppWare, said using the architecture will enable him to cut back on project staff.

The platform accomplishes all this through the AppWare Foundation, a common higher level API that will incorporate lower level APIs that can link to a wide range of network, GUI and client systems, Novell said. Also key are Application Loadable Modules (ALM), which are reusable modules of code that can call up specific network services such as electronic mail or printing across a variety of local client and networked server environments (see chart at right).

Novell's Willie Tejada *would not give time frame for adding support for other network systems*

Whole welcome

AppWare's APIs will even incorporate rival networked application development environments, such as Apple's OpenDoc and Microsoft's Object Linking and Embedding, a Novell spokesman said. No time frame was given.

Novell will offer development tools for building ALMs using third- and fourth-generation languages. A Visual AppBuilder will enable users to build applications by calling up different ALMs as icons and then merging the ALMs' functions by drawing lines between them.

Right direction

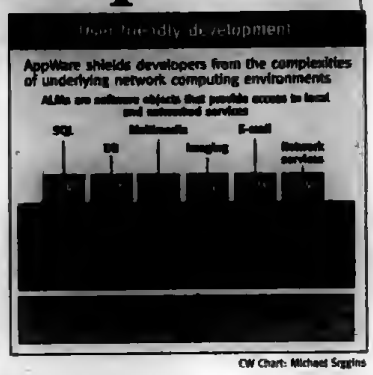
Initial user response to AppWare was highly favorable.

Novell's concept of "middleware that frees you from being [network operating system and client] platform-specific is exactly where we'd like to see the industry going," said Paul Dunton, director of technical planning and assessment at Pacific Gas & Electric Co. "Someone should have done this five years ago."

The San Francisco-based utility is part of the Network Applications Consortium, a user group that has been trying to promote networked applications within the Banyan Systems, Inc. Vines environment.

Novell plans to ship an AppWare Software Development Kit in October, and the initial customer release is set for May. The initial releases will support the network service environments of Novell and its subsidiary, Unix System Laboratories, Inc., as well as Windows, DOS and Macintosh clients, according to Willie Tejada, Novell's director of developer relations.

Applications written to AppWare will also be able to access services that comply with the Object Management Group's Common Object Request Broker Architecture, Novell spokesmen said. The links are being developed by recent Novell acquisition Hyperdesk.



CW Chart: Michael Siggins

Tejada refused to provide even a vague time frame for adding support for other network operating systems or even to commit to which ones would be supported first. He added that while Novell is definitely looking at providing AppWare support for popular platforms, such as Apple Computer, Inc.'s Open Collaborative Environment, Vines and Microsoft Corp.'s Windows NT, the order and timing will depend on market demand.

While no pricing was available, a Novell spokesman said AppWare would be priced low for high market penetration.

Novell

CONTINUED FROM PAGE 1

da, director of developer relations at Novell. Direct support for distributed platforms such as Vines and the Open Software Foundation's Distributed Computing Environment depends on user demand, he said.

Still, some users were impressed. Louis Kahn, chief of network operations at the National Immunization Program in Atlanta, said, "Programming to NetWare can be quite difficult, and programming to mixed Novell and Unix, or Novell and LAN Manager, even more so." But he said he would have to see AppWare before he believed Novell's claims that its unified application programming interface (API) did not represent "a trade-off in speed for ease of use."

Paul Bandrowski, manager of advanced technology at Sara Lee Corp., said applications generated with these object-oriented tools did have "phenomenal performance in some cases." He said he thinks AppWare solves the high-level efficiency problems by "taking the 20% of code that does 80% of what development needs and making it extremely fast."

Bandrowski has seen demonstrations of Serius Corp. and Software Transformation, Inc. products that are the forebears of Novell's platform.

Sara Lee is already preparing to use AppWare to design a series of client/server applications,' Bandrowski said. The company expects AppWare's APIs and Application Loadable Modules (ALM) to cut the amount of code needed to develop applications from 100,000 to only 1,000 or 2,000 lines and to cut the time and money spent by 80% or even 90%, he added. "Projects that cost $1 million or $2 million will cost $100,000 or $200,000."

But some analysts suggested Novell may be biting off more than it can deliver in a timely fashion.

The vendor has committed to providing what "all the object-oriented vendors have said will take another two years to solve," said Tom Kucharvy, an analyst at Summit Strategies, Inc. in Boston.

The success of AppWare as a standard depends on how quickly Novell can generate support from key independent software vendors and application development tool companies, according to David Cearly, an analyst at Meta Group, Inc. in Westport, Conn. And that means making it very easy to build the ALMs, the reusable application building blocks that are a core AppWare component, he added.

Third-party skepticism

While a number of third parties voiced general support for AppWare, only a few said they were committed to hooking their products to Novell's platform. Among these are Gupta Corp., Borland International, Inc., WordPerfect Corp., Easel Corp., Powersoft Corp. and Oracle Corp.

Some doubts about AppWare's viability cropped up even among the most public supporters. One of the third parties that has committed to supporting the architecture said privately that if the price of support is too high, it may back off.

Furthermore, Gupta and Powersoft spokespeople said that while they are likely to support the ALMs with their application development tools, they will wait and see how difficult it is to port to the AppWare Foundation's high-level programming interface.

Senior writer Melinda-Carol Ballou contributed to this story.

DEC takes plunge into low-end routing

By Joanie M. Wexler
MAYNARD, MASS.

Digital Equipment Corp. entered its bid last week for a share of the most fertile ground in the internetworking market: the ultra-low end.

By including support in a branch office product for all of today's key routing algorithms — software that allows routers to exchange network topology information — DEC is hoping to penetrate other router backbones. These include those from Cisco Systems, Inc., said Charlie Robbins, an analyst at Aberdeen Group, a Boston consultancy.

The DECbrouter 90, developed in cooperation with Cisco, supports Cisco's proprietary routing algorithm along with standard algorithms for Transmission Control Protocol/Internet Protocol and Open Systems Interconnect networks. This means users choosing the DEC bridge/router for a remote office could hook into a Cisco or other backbone.

Interoperability doubts

Users are generally shying away from building multivendor router networks today because of their lack of confidence in interoperability among products.

John Johnson, senior vice president at Anixter Distribution, a Skokie, Ill.-based DEC reseller, said the announcement could appeal to companies with Cisco backbones and some DEC equipment at remote sites. Small remote staffs would then have just one vendor to deal with, he said.

The DECbrouter 90 supports most communications protocols and optionally comes as a module for the low-end DEChub 90 smart wiring hub. It accommodates Ethernet local-area networks only.

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Sun simplifies Solaris migration

By Jean S. Bozman
NEW YORK

Responding to user complaints about moving applications to SunSoft, Inc.'s Solaris 2.X operating system, the Sun Microsystems, Inc. subsidiary last week provided software and services to ease migration from older SunOS systems.

Sun Chairman Scott McNealy acknowledged the painful transition from SunOS (Solaris 1.0) to Solaris 2.X at last May's SunWorld show in San Francisco. "Transitions are always hard; they're always painful," he said. "We have tried to provide the best migration path."

But ever since last spring's Solaris developer's conference in Santa Clara, Calif., users have been grousing that Sun was minimizing the difficulty of recompiling older SunOS applications. At the same time, Sun pushed Solaris 2.X sales higher by bundling it with new Sun machines, from the high-end SPARCcenter 2000 symmetrical multiprocessing machine to the low-end SPARCclassic.

"I was very critical of them because they did not provide a true migration path," said Michael Prince, director of information services at Burlington Coat Factory, Inc.'s data center in Aetna, N.H. The retail firm owns more than 300 Sun workstations and servers nationwide. "We have not migrated all our applications to Solaris 2.0 yet. It's not that it's difficult, but I don't want the technical issue of migration to interfere with my business priorities. I need the flexibility to get there at my own pace."

Sun responded by combining "transition" software with support for those migrating from SunOS to Solaris 2.X, including third-party software developers and information systems shops. Software that is binary-compatible with SunOS 4.X code and Solaris 1.0's file-naming system for network systems administrators will be supported under Solaris 2.X.

An on-line database of migration tips and techniques and more phone support round out the SunSoft migration program's offerings.

At the same time, Sun said it would start selling Solaris 1.1 software with microSPARC hardware, including the SPARCclassic and SPARCstation LX. Until the announcement, users buying new low-end Scalable Processor Architecture (SPARC) systems had been forced to move to Solaris 2.X.

"That's exactly why we purchased 100 [Sun] clones," said Jerry McEachern, manager of technology resources at *The Houston Chronicle*, which has a publishing system on 16 Sun file servers and 300 Sun workstations. "We weren't willing to take Sun's LX and their Classic if they only ran Solaris 2.X."

SunSoft expects Solaris 2.X to become the dominant operating system in the Sun installed base sometime in 1994. But so far, that growth has been fueled less by longtime users than by booming shipments of Solaris 2.X on new Sun machines. "We want to make all of this [migration] information available to people so we can get past the inertia," said Michael Zadig, SunSoft's director of sales and development engineering. Zadig said third-party software firms are shipping 660 Solaris 2.X-compatible applications now, and 1,400 more are expected to ship by year's end.

Industry analysts agreed that Sun's program was created to respond to users who want to maintain new and old applications alike. "To their credit, they are addressing it and not sweeping it under the carpet," said Neal Hill, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

Alan Levowitz

Hard move
Sun Chairman Scott McNealy acknowledged the painful transition from SunOS (Solaris 1.0) to Solaris 2.X at this spring's SunWorld show in San Francisco. "Transitions are always hard; they're always painful," McNealy told an open-mike session at Sun World in May. "Sun has a limited engineering budget, and we cannot continue to support old operating environments on all new platforms," he told hundreds of users. "We have tried to provide the best migration path."

IBM readies server versions of AS/400

By Craig Stedman
SOUTHAVEN, MISS.

IBM executives last week said the company expects to lay out plans in September for improving both the file and database server capabilities of its Application System/400s, but they left unclear the date of actual product shipments.

"I think we'll talk about a lot of this in September and then ship the products later," said Glenn Van Benschoten, who manages AS/400 development for IBM's Application Business Systems (ABS) unit.

IBM will make high-end AS/400 central processors available on lower end models of the system, off-load file processing functions from the CPU to I/O processors and offer a streamlined kernel version of OS/400.

Van Benschoten said the low-end platforms with the faster CPUs will be positioned as "specialty models optimized for client/server." IBM wants to get the pumped-up hardware out "soon" to provide cover while it works to improve the throughput of the AS/400's Transmission Control Protocol/Internet Protocol (TCP/IP) implementation.

"We'd like to throw some MIPS at it until we get the software paths in place," Van Benschoten said. IBM originally put TCP/IP "up too high at the application level" and is now reimplementing it below OS/400 in hopes of getting a tenfold performance boost during 1994, he added.

One thing IBM does not plan to do is put Novell, Inc.'s NetWare on the AS/400. Dick Kiscaden, ABS client/server solutions manager, said performance would not be good enough to justify the move. Instead, he said IBM is "working on improving general coexistence capabilities."

OS/2, Taligent

CONTINUED FROM PAGE 1

a range of object-oriented client/server features to the machines.

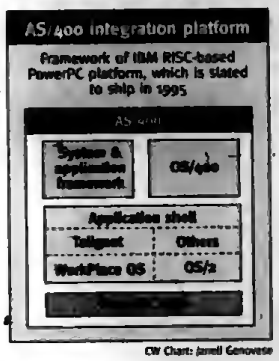
Also planned on the latter score, IBM executives said here last week, is the rollout during the next two years of a full application development environment based on C++. The company said that should supplant the RPG language as the key platform for the AS/400.

Also, IBM is working on object extensions to the AS/400's relational database and rewriting its PC Support networking software to an object-oriented model. Both should also be ready in 1995.

WorkPlace OS will be built into the PowerPC machines as an application shell below the OS/400 operating system, rather than as a base microkernel with OS/400 residing on top of it as a personality, said Frank Soltis, AS/400 systems architect at IBM's Application Business Systems (ABS) line.

That approach will prevent other operating systems from being run directly on the AS/400, but having that capability was "not that interesting" to ABS, Soltis said. "What we'd like to do is run some selected applications, not [another] operating system."

IBM is especially interested in access to applications that will run under Taligent's planned object-oriented operating system and in enabling client/server programs to be written on the AS/400 for execution on Taligent-equipped hardware, Soltis said. Applications for OS/2 and potentially IBM's AIX derivative of Unix could also be run via WorkPlace OS, he added.



CW Chart: Janell Genovese

Initial user reaction is very cautious. Scott Plumer, project manager for technical support at Gannett Co.'s data center in Silver Spring, Md., said he is uncertain how useful the application-sharing capability will be, but he said it at least "would show it's not a fixed, closed machine."

Marc Cohn, senior vice president of information systems at Enterprise Rent A Car Co. in St. Louis, also has mixed feelings about the WorkPlace OS plan. "I have a huge number of questions as to how truly transportable applications will be under this concept," he said. "Melding all that together seems to be a great start, but I don't know what the finish is."

Teresa Elms, president of consulting firm Elms Information Services Group in San Diego, said the move is likely to increase system management complexities. "It just becomes a lot more messy, but on the other hand, the world's moving in that direction," she said.

IBM's object-oriented development road map calls for C++ to be supported this year on OS/2 and Windows machines that could connect to the AS/400 through PC Support. A native AS/400 version is due in tool kit form next year and full release in 1995.

One more "major crank" of RPG is planned next year, but that language "is not going to be that relevant to new applications built in the 1995-1996 time frame," said John Swainson, manager of application development technology at IBM's Toronto software lab.

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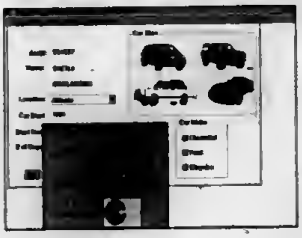

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GSA Contract Number GS00K90AGS5251-PS02

Apple previews groupware

By James Daly
SAN JOSE, CALIF.

Apple Computer, Inc. users got a taste of real interoffice collaborative abilities last week when they were given a sneak peek at the upcoming Apple Open Collaboration Environment (AOCE) System 7.0 software extension.

The demonstration at Macivity '93 marked the first forum outside of last May's closed-door developers conference where AOCE was demonstrated. AOCE, Apple's first stab at the type of interactive groupware capabilities provided in products such as Notes, is expected to be officially announced at Macworld Expo/Boston in August.

AOCE is a set of application programming interfaces (API) that promises to link and integrate disparate applications running under System 7.0. Developers will be able to tap into the power of the extension simply by hooking into AOCE APIs. Users will have immediate access to a wide variety of communication methods, including fax, telephone, electronic mail, calendaring and Internet messages.

While user enthusiasm for AOCE is high, gripes have already surfaced. Topping the list: cross-platform capability, which will not be available for at least six months. "I'm glad [AOCE] is almost here, but they don't have all the pieces there yet because we're really going to need that cross-platform capability," said Nancy Tresnak, a project manager at Sprint Corp. in Kansas City, Mo.

Until that capability is added, users will have to maintain transport and delivery services on other platforms. "We can't solve all of the world's problems in one single sweep of the hand, but our top priority after this first release is to take it to other platforms," said Andy Lauta, product manager for AOCE.

Even with this shortcoming, collaborative computing is clearly where users want to go. Marcello Gallardo, a test specialist at Princeton University, said he could envision an AOCE in which professors could instantly mail out lecture changes or course additions to every student. Such unified updating is difficult now because of the wide variety of E-mail packages used by students.

AOCE is divided into AOCE system software, a set of technology services to foster collaboration, and At Your Service (AYS) server software, which was designed to centralize management of these services.

At the heart of the technology services is an information repository containing "data cards" that can be customized for mailboxes. Also included are several security features, such as a digital signature technology called DigiSign that ensures that a message has not been altered in transmission.

Apple will allow users to access third-party products through back-end hooks called Software Access Modules.

Here, AOCE would require roughly an additional 1M byte of memory; each service access module would require about 100K bytes each.

Both a Catalog and a Mail server package will be offered, with the Mail server able to handle 8,000 messages per hour in tests.

AYS server software will work on any server running System 7.0 and based on a 68020 chip or higher.

Vendors ally on object blueprint

By Michael Vizard
NEW YORK

Five of the leading PC software providers last week unfurled plans to develop an infrastructure positioned as the foundation for the next generation of object-oriented operating systems.

The plan calls for Apple Computer, Inc., IBM, Novell, Inc., WordPerfect Corp. and Borland International, Inc. to cooperate in the development of a cross-platform architecture due out in one year that will be based primarily on an object file format from Apple running on top of IBM's distributed system object model.

Collectively, these technologies, which will comply with the Common Object Request Broker Architecture specification created by the Object Management Group, will be promoted under the OpenDoc architecture. This architecture, which will include support for Microsoft Corp.'s Object Linking and Embedding (OLE) protocol, is seen as a counter to the Windows-specific object-oriented environment called Cairo that Microsoft is building.

WHAT THEY BRING TO THE PARTY

OpenDOC Alliance members	Contribution
Apple	• Bento object file format • Application integration technology
IBM	• Distributed system object model
Novell	• Support for AppWare API • Lower level network services
WordPerfect	• OLE 2.0 integration with Bento
Borland International	• Application development compilers

Important role

Such architectures are expected to become pivotal as the industry moves away from discrete operating systems and applications toward document-centric operating systems where system services and individual features can be called on by any user to create compound documents.

"People want to see objects architectures that will work across platforms," said Jesse Berst, editor of the "Windows Watcher" newsletter.

OpenDoc "essentially means you'll have built-in groupware type functions in the documents," said Rick Spitz, vice president of system services at Apple.

So far, the industry's latest coalition has drawn little attention from either Microsoft Corp. or Lotus Development Corp., and information systems directors are somewhat skeptical about the initiative's overall impact.

And while OpenDoc is expected to serve as the foundation for distributed objects, the technology required to distribute and track the licensing of such objects is still in its infancy. For example, using OLE, an application can be turned into a 2M-byte object that can be called by other applications. But making individual components of an application into discrete objects that can be called by other applications requires a much more intensive development effort.

According to WordPerfect Chairman Alan Ashton, however, the technology to manage object licenses should fall into place at about the same time that object-oriented computing becomes mainstream, which is expected to happen in the latter half of this decade.

As a result of these and other issues, IS managers are saying that while they applaud the OpenDoc initiative, they do not think it will have an immediate impact on their IS strategies.

"Once they build the architecture, they'll have to optimize the compilers, and there is a lot of baggage in terms of inheritance between objects that has to be dealt with," said Carl Hane, manager of applications development at MCI International, Inc. in Rye, N.Y.

In the meantime, neither Lotus, which markets Notes as a cross-platform set of middleware services for groupware applications, nor Microsoft appears ready to endorse the OpenDoc initiative.

Specifically, Lotus executives said that while the company has contributed technology to Apple that allows Bento objects to run under Windows, it has no plans to endorse the OpenDoc effort yet. Bento is the object file format used by Apple. Microsoft said it welcomes any increased focus on object technology but noted that its plans call for deploying OLE across Windows, Macintosh and Unix platforms.

A developer's kit for OpenDoc is due around the beginning of 1994.

Taligent

CONTINUED FROM PAGE 1

pressure, Taligent, which has only talked about mid-1990's product deliveries, is considering some "interim" releases to appease its masters, the source said.

Recently, Taligent CEO Joseph Guglielmi said the company will begin integrating early pieces of its emerging technologies into both System 7.0 and OS/2.

And although Taligent is not scheduled to launch its full object-oriented operating system for at least 18 months or more, the early fruits of Taligent's already extensive technological work came at last week's PC Expo during Apple's announcement of its OpenDoc platform (see story at right). OpenDoc uses several "chunks" of Taligent technology, said Mike Potel, Taligent's vice president of technology development.

Also, IBM is reportedly preparing to take other pieces of Taligent technology and book them into both a PowerPC-based Application System/400 platform (see story page 1) and two technologies being used in OpenDoc: the System Object Model interface and the Distributed System Object Model.

Users might see more activity as Taligent developers hustle to beat speculation by Apple insiders that as much as $150 million of the company's $600 million-plus yearly R&D budget could be whacked by Spindler [CW, June 28].

There is also speculation that Taligent may turn to other companies either for money or programming. The leading contender is Borland International, Inc., which has shown great flair in the field of object-oriented technology.

According to Potel, it will be awhile before Taligent releases its own commercial product. He said Taligent is on schedule to deliver its operating system by "mid-decade."

A rudimentary version is running in the lab, but "it's like a skeleton, and now we have to add some meat to the bones."

Around the corner

Some Taligent insiders said the company could demonstrate a basic implementation as early as Comdex/Fall '93 in November. Taligent is expected to release an early version of the operating system as soon as the end of next year, but it is not going to "drop the whole system in the laps of users all at once," said a spokesman.

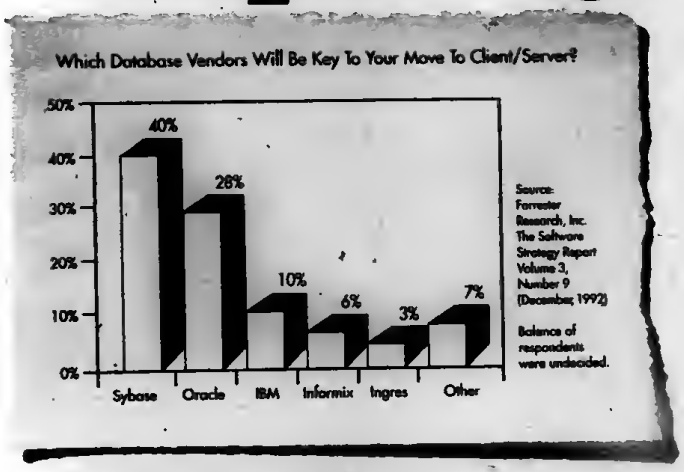
Users are not holding their breath.

"I've seen both companies go down this partnership road before, and I can't build our future around their plans," said Allen Head, information systems development manager at Universal Flavor Corp. in Indianapolis.

Taligent officials acknowledged that they have done a poor job of selling the why's and wherefore's of their ambitious two-year foray to their targeted users. Many IS professionals still regard the lofty blueprint as little more than an interesting sideshow.

West Coast correspondent Christopher Lindquist contributed to this report.

The analysts have graphed the future of Client/Server computing.



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IBM PC Co. restructures

By Michael Fitzgerald
NEW YORK

IBM last week made its first shifts in the PC realm since last September's creation of the independent IBM PC Co., folding one of its Personal Systems units into the IBM PC Co. and forming a new unit devoted to the PowerPC.

Separately, IBM officials discussed plans to invigorate the Personal System/2 line.

The Power Personal Systems (PPS) Division will focus on building lower cost machines, possibly down to the handheld level, based around the PowerPC architecture, which was jointly developed by IBM, Apple Computer, Inc. and Motorola, Inc. IBM's Advanced Workstation Division, which builds the RISC System/6000, will continue to focus on building high-end PowerPC servers and workstations.

Nobuo Mii will serve as president of the PPS unit, reporting to James A. Cannavino, an IBM senior vice president. Mii was formerly general manager of the Entry Systems Technology (EST) Division, which last week was folded into the IBM PC Co. Paul C. Mugge will run EST and report to Robert Corrigan, president and chief executive officer of IBM PC Co.

IBM said it made the moves to speed delivery of new technology to market. Insiders suggested that Corrigan was not given responsibility over the PowerPC group to let him focus on turning around IBM's Intel Corp.-based business.

As part of that turnaround, IBM officials said last week at the PC Expo trade show that they were planning to shake up their PS/2 line some, shifting some of its branding and giving customers purchasing and technology options in packages it has not presented before.

For example, IBM will no longer bill the PS/2 brand as the domain of high-end technologies but instead will target it at customers expressing more interest in product stability than in rapid and frequent advances in technology.

"Our major accounts are saying, if anything, 'slow down' [the technology onslaught]," said James G. Turner, IBM's general manager, premium brands.

Turner said IBM finds that its major customers typically test a new system for several months before they decide whether to deploy it. Consequently, the company will in the future tend to bring new technologies into the PS/2 line through prototype machines, a la what it did recently with the energy-conserving PS/2 E PC.

IBM expects to focus much of its efforts on providing custom packages for its PS/2 customers, he added.

The company does this on a limited basis for some of its largest customers right now but would opt for a near build-to-order strategy in the future.

IBM also expects to break out its PS/2 server products — Models 85, 95, 195 and 295 — into a separate brand to help market the server products more effectively.

Powerful DOS updates soar past old versions

Several vendors offer beefed-up releases

By Christopher Lindquist
NEW YORK

Although Microsoft Corp., IBM and Novell, Inc. all recently announced or shipped "more-powerful-than-ever" versions of DOS, the best is yet to come.

Microsoft opened the enhancement floodgates this spring when it released MS-DOS 6.0, which despite mixed reports of problems, subsequently broke all records for initial software shipments.

IBM followed up last week at PC Expo, unveiling PC-DOS 6.1, due this month, along with plans to aggressively target Microsoft's DOS market share with price and service options aimed at attracting users and OEMs to IBM's DOS.

One analyst said some hardware vendors may welcome the opportunity to escape Microsoft. IBM has "released a DOS product that allows Microsoft to not be able to put pressure on resellers with DOS," said Frank Drubeck, president of Communications Network Architects, Inc. in Washington, D.C.

Meanwhile, Novell's DR DOS 6.0 will get a name change and some powerful new features in September, when it is slated to ship as multitasking, multithreaded Novell DOS 7.0.

"There are significant opportunities" in the DOS market, said John Constant, product line manager for Novell DOS. These include changes related more to the functionality that surrounds DOS than to DOS itself, he said. DOS 7.0, which is due to go into beta testing shortly, is also being designed to make it an optimal networking client, Constant said.

Meanwhile, IBM's PC-DOS 6.1 includes full versions of backup, memory management and virus protection programs and includes a coupon for AddStor, Inc.'s data compression program, SuperStor.

It also contains Personal Computer Memory Card International Association Version 2.0 support for PC cards as well as basic pen input support that allows a pen to be used much as a mouse is today.

Walter Casey, director of marketing for IBM Personal Software Products, said despite the fact that IBM's technology sharing agreement with Microsoft runs out in September, IBM will launch another version of DOS later this year. Tentatively called WorkPlace DOS, it will include a WorkPlace shell-like graphical interface. He also hinted at a multitasking version of PC DOS.

Microsoft is not idle either. The company is already preparing for the next revision of MS-DOS, which should also include multitasking and multithreading capabilities. A subset of Microsoft's "Chicago" technology, it will reportedly ship next year.

Tony Audino, director of marketing for MS-DOS 6.0, said Microsoft owns the rights to the de facto DOS standard. After the technology sharing pact runs out, both Novell and IBM will have to clone MS-DOS technology to maintain compatibility, he said. Cloning "is a tough game to be in," he said. "I don't care who's doing it and how sharp they are."

Compaq boards the OS/2 bus

Compaq Computer Corp. last week said it will bundle OS/2 2.1 from hardware rival IBM into its hardware. Compaq will provide support for OS/2 using a technical staff trained by IBM.

Compaq Vice President John Paul said a "double-digit" number of customers, particularly those with "big iron," requested OS/2 on Compaq boxes. Also preloading OS/2 are AST Research, Inc., Northgate Computer Systems, Inc., Toshiba America Information Systems, Inc. and Everex Systems, Inc.

—Christopher Lindquist

Xircom links mobile users

By Lynda Radosevich

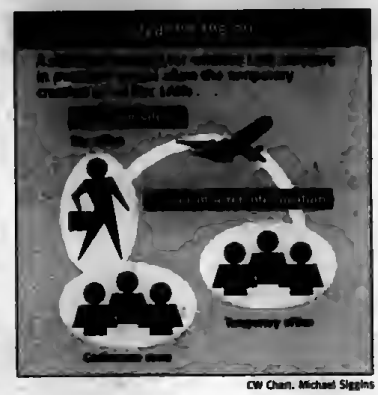
Xircom, Inc.'s Netwave wireless local-area network protocol, announced last week at PC Expo, aims to give mobile PC users the option of connecting to their wired office LANs or forming ad hoc peer-to-peer networks with other mobile users, regardless of their brand of wireless adapter [CW, June 7].

For instance, an executive could wirelessly load information from the corporate LAN, then fly to a remote location and share the information on-line with others by forming an instant network.

The protocol may catch on. Digital Equipment Corp. and chip makers Advanced Micro Devices, Inc. and NCR Corp.'s Microelectronics Products Division expressed interest in developing products using Netwave.

Others, such as Novell, Inc., Dell Computer Corp., NEC Technologies, Inc. and Sun Microsystems, Inc., have voiced general support for Netwave's goals.

However, vital backing from other wireless LAN vendors is missing. Representatives from Proxim, Inc. and the wireless LAN division of NCR said they will wait to support a formal standard from the IEEE 802.11 committee. That standard is not expected to be finalized for two to three years.



CW Chart, Michael Siggins

Xircom also demonstrated its own Netwave products, which are due this fall, including a parallel port adapter, a Personal Computer Memory Card International Association Type 2-compliant adapter and a bridge to wired Ethernet networks. A bridge to Token Ring networks will be available in 1994, Xircom said.

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Gates says Windows NT is a form of Unix

By Christopher Lindquist
NEW YORK

Windows NT came full circle last week — from snubbing Unix to becoming Unix — when Microsoft Corp. Chairman Bill Gates used his PC Expo address to proclaim that "Windows NT will be the most popular form of Unix ever."

Early in its history, Windows NT was perceived as having an anti-Unix bent, but months of development have brought a variety of Unix-like features to the as-yet-unreleased operating system, including Posix compliance, a Sockets interface and Transmissinn Control Protocol/Internet Protocol support.

Gates' declaration took some users by surprise, but analysts said it made sense. Among the skeptical was Bob Young, editor of the "New York Unix Newsletter."

"While NT is vaguely compatible with Unix, it's a stretch to say it is a form of Unix in any way," he said.

Stable by association

Analysts reacted by suggesting that comparing Windows NT to Unix may be an attempt by Microsoft to associate the unhatched operating system with a mnre established and mature environment. "I'm not surprised to hear Bill Gates tack himself onto Unix," said Judith Hurwitz, president nf Hurwitz Consulting in Newton, Mass. "Unix is something that has been out there 20 years, and it's stable."

That could have a calming effect on customers whn would be wary nf going with an entirely new operating system bnt might be willing to try another form of Unix, she added.

Positioning Windows NT as Unix could also have been designed to have a chilling effect on Windows NT competitors, such as UnixWare from Novell, Inc. Novell recently began a media campaign to increase awareness of its "desktop Unix" and to present it as a viable desktop operating system.

Gates' comments that Windows NT is indeed Unix could be an attempt to keep some customers from adopting UnixWare before Windows NT begins shipping, possibly as early as next month.

"Bill Gates understands perfectly well where NT is competing and that's at the Unix vendors," said Rikky Kirzner, an analyst at Dataquest, Inc. in San Jose, Calif. She added that Novell is also the only software firm suitably equipped to compete directly with Microsoft for the desktop, and therefore Microsoft must take its Unix nffering seriously.

Gates fired some practice rounds at his Unix competitors during a question-and-answer session after the keynote. He criticized the "design by committee" nature of the Unix world, describing the system as one where companies get together to define a standard before going off to work on proprietary extensions. Gates said Microsoft would not tolerate that with Windows NT development.

IBM commits to peer networking product

IBM used the PC Expo show last week to once again demonstrate its vision of peer networking. But this time, there was one important difference: IBM made a commitment to market the product.

Lee Reiswig, president of IBM's Personal Systems Products Division, said his unit plans to ship a peer networking product late this year or early next year. The yet-to-be-named OS/2-based product, which has been demonstrated at previous PC conferences, would compete with Microsoft Corp.'s Windows for Workgroups in the emerging small workgroup computing arena.

IBM showed nff the latest version of the software, which included an object-oriented interface and a clipboard for linking data residing on applications running on different workstations. The software was licensed from Symbotics, Inc. The new build also featured more robust messaging capabilities than those previously demonstrated.

—Alan Alper

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News Shorts

Sterling consolidates after acquisition

The effects of the merger between Sterling Software, Inc. in Dallas and Systems Center, Inc. in Reston, Va., came swiftly last week. Within hours of the final filing with the Securities and Exchange Commission, 400 employees of the combined 3,200-member work force were terminated — and the $390 million merged company's scattered business units were reorganized into four groups of four divisions. Many of the 400 layoffs resulted from overlap in administrative functions.

KnowledgeWare revenue not so bad

KnowledgeWare, Inc. last week offered a preliminary glimpse of fiscal fourth-quarter revenue, which exceeded analysts' estimates. The firm is expecting to post revenue of $38 million, compared with $34 million for the comparable period last year. Revenue for fiscal 1993 is expected to be $127 million, up 9% from last year. But the company is expected to post a $25 million net loss for the year, including about $20 million in restructuring charges, financial analysts said.

Compaq restructures PC division

Compaq Computer Corp. split its PC division into separate units for desktop and portable computers. Compaq brought in John T. Rose, who headed Digital Equipment Corp.'s PC business for eight years, to serve as senior vice president of the Desktop Division. Jim Hartzog, vice president of engineering in the former PC division, is now senior vice president and general manager of the portable PC division. Tom Bunch, formerly at Toshiba America Information Systems, Inc., will become vice president of communications products, reporting to Hartzog. Compaq also hired Robert W. Stearns, a McKinsey & Co. consultant, to be its vice president of corporate development, handling technology sharing ventures and alliances.

Apple connecting Newtons to Macs, PCs

With its Newton personal digital assistant slated to be officially introduced at next month's Macworld in Boston, Apple Computer, Inc. last week announced the Newton Connection Kit, which enables the transfer, backup and updating of information between a Newton and a PC or Macintosh computer. Newton Connection Pro version will translate information created on the Newton so it can be shared with common Windows applications on a PC.

3Com scales networks

3Com Corp. last week sketched out plans for helping users migrate from today's packet-based local-area networks to higher speed networking. The company said it will double the number of Ethernet ports on its NetBuilder II multiprotocol router in the third quarter and will allow its hub users to software-configure "virtual" workgroups during the first half of next year. 3Com said it will also add a module called "CellBuilder" to its hubs and routers to convert LAN packets to Asynchronous Transfer Mode cells during the second half of next year.

SHORT TAKES Chemical Banking Corp. is standardizing its 385 New York branches on NCR Corp.'s Unix-based System 3000 workstations and servers, under the $32 million contract. . . . Wang Laboratories, Inc. last week agreed to sell the consumable office and computer supplies portion of its Wang Express catalog and telesales business to Nashua Corp. . . . Nine more vendors, including Hewlett-Packard Co., Epoch Systems Inc. and Remedy Corp., have signed up to support the object-oriented Tivoli Management Environment for distributed computer networks from Tivoli Systems, Inc. in Austin, Texas.

IBM announces LAN/host scheduling tools

By Lynda Radosevich
NEW YORK

IBM last week joined the growing list of vendors trying to meet the scheduling needs of users in mixed hardware environments [CW, June 14] with product introductions from its Programming Systems Group and a demonstration of technology designed to help its host-based OfficeVision customers migrate to local-area networks.

"IBM has the opportunity to lead this industry because they own the back end," said Mike Anderson, an analyst at Gartner Group, Inc. But first, IBM must live up to its strategy of developing open applications — right now it is "OS/2-centric" — and spruce up some "cumbersome" client software, he said.

An IBM official said the company plans to ship products for platforms, including OS/2, Windows, Macintosh, Application System/400 and OfficeVision "within a two-year time frame," and will continually work to upgrade the applications interface.

Meanwhile, because information resides on a central database, IBM's back end is faster and more robust than LAN-based scheduling packages that rely on messaging engines, such as Microsoft Corp.'s Schedule+ for Windows, Anderson said.

Included in IBM's rollout were the following:

- Software that allows IBM's OS/2-based Time and Place/2 LAN scheduling software and OfficeVision/VM users to view one another's calendars in real time and look for free time slots.
- Address book synchronization software that lets users extract OV/VM directory information and transmit the data to mail directories for Lotus Development Corp.'s CC:Mail and Notes.
- Translation software that enables the exchange of electronic mail between Notes and OV/VM.
- A Windows interface for IBM's host-based Current-OfficeVision/400 workgroup program that provides PC users with a graphical interface to OfficeVision information on AS/400s.

The above products should be generally available in two to three months, IBM officials said.

Group forms to compare processes

CONTINUED FROM PAGE 1

discuss the results.

"There is considerable value in benchmarking your organization against world-class organizations. Maybe we could learn and adapt to some of the other best practices," said Gen. Donald R. Lasher, chief information officer and president of the information services division at USAA, a San Antonio-based insurance firm.

USAA's Gen. Donald R. Lasher: *'We found that we were average'*

"What I have proposed is that [Fedex] maintain benchmarking so we can gauge our progress on an ongoing basis," said Dennis Jones, senior vice president at the information and telecommunications division of the Memphis-based package carrier.

The consortium grew out of benchmarking work performed in late 1991 by IBM Consulting for Amex's Travel Related Services Co. (TRS). IBM Consulting benchmarked TRS's information technology management processes against those from 17 other major companies, including Fedex and USAA.

"In the past, we had compared our IT function with that of other companies, but we had always looked at costs," recalled Garland Cupp, CIO at TRS.

"The difference in [the 1991] benchmark was that we were examining processes and interrelationships, which gave us a whole new insight on how IT fit into the overall business environment," Cupp said.

Lasher said the Amex benchmark was an eye-opener for him. "We found that we were average — as opposed to above average — in competitive assessment. We realized that while we had constantly measured our business against our competitors, we had done little to assess our competitors' information systems," he said.

The willingness by companies to openly share information about themselves with competitors and others has proven effective and is on the rise, according to Tobey Choate, a vice president at Arthur D. Little, Inc. in Cambridge, Mass. "If you can organize key IT processes and gather information on what other people do, it can be very enlightening."

Lasher said he is hoping that type of open dialogue will carry over to the Benchmark Consortium. One of his objectives is to gain greater insight on how other companies have been making the transition from older Cobol programs to computer-aided software engineering, object-oriented programming and client/server systems.

"Everybody is sort of feeling their way through these technologies right now, so it would be interesting to see how the other guys are transitioning their work forces," Lasher said.

According to Fedex, benchmarking helped unify the company. "By involving users outside the IS function in the benchmarking study, they felt like they were a full member of the quality improvement process," Jones said. "It strengthens the relationship between IS and users by asking them to participate and provide feedback."

What they're looking at

The Benchmark Consortium — 20 U.S., 10 European, three Japanese and two Australian member firms that formed to benchmark IS functions and business processes against one another — has earmarked seven areas for assessment:

- Legacy systems.
- Balancing legacy systems with new technologies.
- Aligning business needs to drive information technology.
- Getting a firm's culture to work for it.
- Partnerships to develop information technology more effectively.
- Business/technology pressures on human resources.
- Value delivery: Are companies getting the most from IT bang for the buck?

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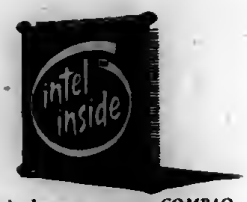

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DG hopes Aviion servers revive results

By Stephen P. Klett Jr.
BOSTON

Trying to right listing revenue, Data General Corp. this week unveiled its next-generation family of Aviion servers, a new version of its DG/UX Unix operating system and several software partnerships.

Analysts called the announcement a near make-or-break move in light of DG's recent string of weak financial showings.

DG reported a net loss of $7.6 million for the second quarter this year and said it anticipates that its third-quarter results will be lower than expected.

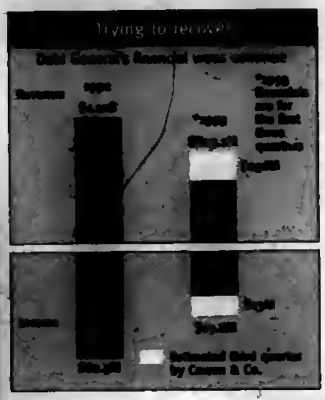
"It's very critical for them to do well over the next eight to 12 months," said John Morell, an analyst at International Data Corp. in Framingham, Mass. "If they don't, it will be tough for them to continue in what is already a cutthroat market."

Barely making its self-imposed deadline, DG announced two server lines based on Motorola, Inc.'s 88110 microprocessor. The high-end AV9500 line ranges from two to 16 processors, and prices range from $84,000 to $280,000. Two- and four-processor models are available.

DG said the 16-processor AV9500, due to ship next spring, will top out at 1,000 transactions per second and 1,600 million instructions per second, with more than 2G bytes of main memory and support for more than 1T byte of on-line storage. The midrange 8500 line comes in two- and four-processor models and is shipping now starting at $36,000.

Houston-based Star Enterprise has ordered a four-processor 9500 for one of its three Aviion-based data centers.

"When we started up, we were faced with a corporate mandate to find the cheapest way to run that we could," said Gary Richardson, director of information technology. "Based on our own benchmarks, we felt Aviion was the best server for the money."



In conjunction with DG's announcements, Computer Associates International, Inc., Information Builders, Inc. and Dun & Bradstreet Software said they will announce plans to port software to the Aviion platform.

DG/UX 5.4.3, DG's new version of Unix System V Release 4, comes bundled with Legato, Inc.'s Networker software for unattended network backup and recovery. It is available now at prices ranging from $[illegible] to $25,000.

Here to stay

DG hinted at future plans for the 88000 processor. Thomas West, senior vice president of advanced development, said customers can expect to see a third generation of Aviion servers based on an 88000 chip two years from now.

"The rumors of the 88K's demise are premature," West said. "It's well-designed for [symmetrical multiprocessing] and is definitely a part of our future plans."

West said once the company has exhausted the capabilities of the 88000 it will consider alternatives such as Motorola, IBM and Apple Computer, Inc.'s forthcoming PowerPC chip.

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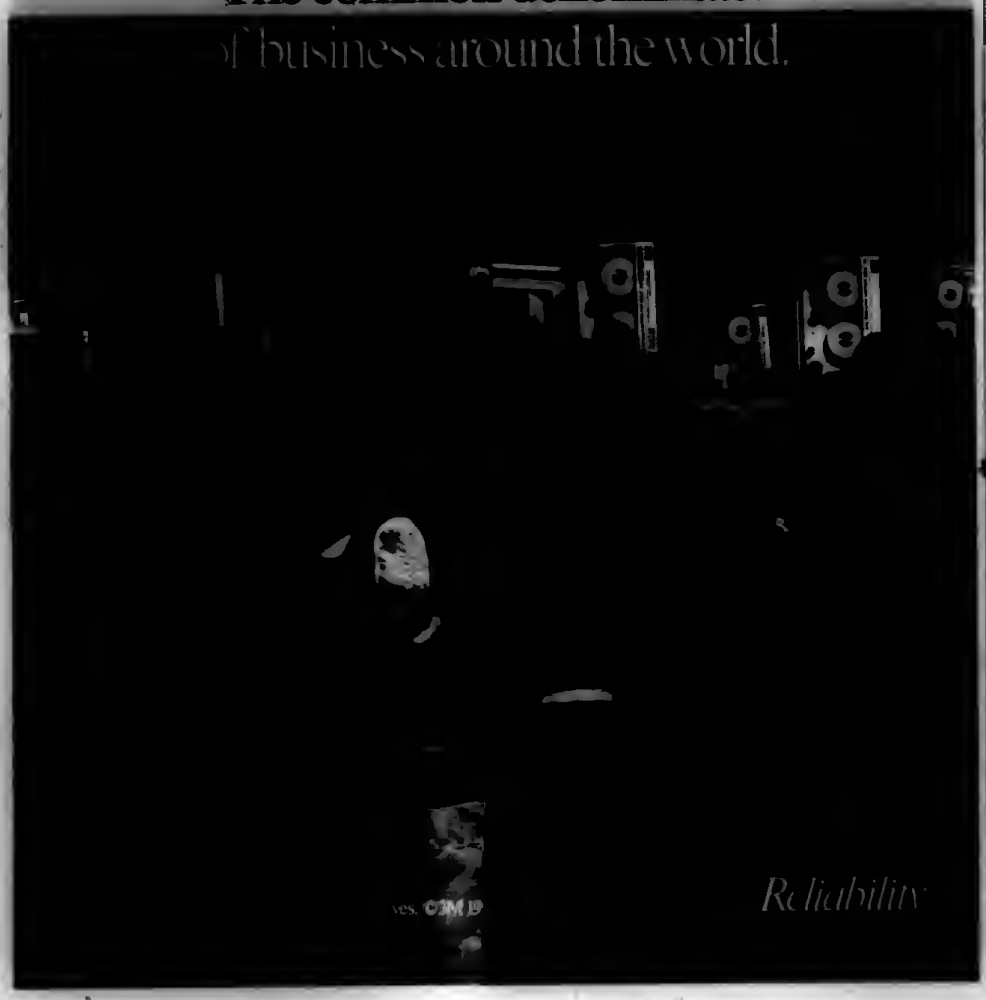

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Chipcom, SynOptics offer LAN switch innovations

By Joanie M. Wexler

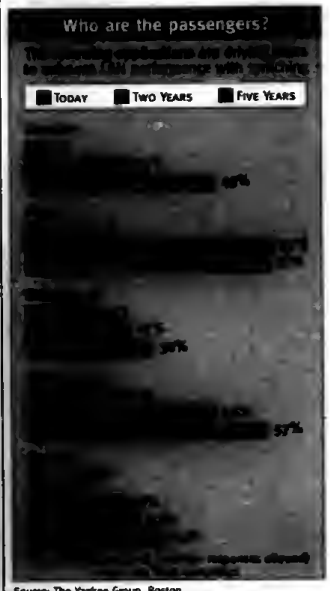
Users gained options for widening their local-area data highways last week when smart hub vendors Chipcom Corp. and SynOptics Communications, Inc. put new spins on today's local-area network switching technology.

LAN switches allow users to dedicate a LAN's worth of bandwidth to an individual server, workstation or small group of computers. This can ease network slowdowns caused by computers vying for a fixed amount of bandwidth.

Chipcom's twist on the network-resuscitating technology is a hardware module for its OnLine Concentrator that users can upgrade from an Ethernet switch to a bridge, then from a bridge to a router as their internetworks expand. The capability could be less expensive than buying new hardware devices when growing networks require the traffic filtering functions of bridges and routers.

For example, Chipcom shop MetroWest Medical Center in Framingham, Mass., prefers to get these various functions out of one card rather than from multiple devices, said Steve Flis, network manager. "I assume it will be cheaper, but I'll have to make sure" before committing to a purchase, he said.

MetroWest, which will soon begin beta-testing the Chipcom module, plans to use it as a switch to provide two bandwidth-munching billing applications with its own 10M bit/sec. Ethernet.



Source: The Yankee Group, Boston

Meanwhile, SynOptics unleashed its year-in-development Ethernet switch for its LattisNet System 3000 hub. The switch is based on Kalpana, Inc. technology and includes Kalpana's recently announced "full-duplex" two-way technology [CW, May 28].

SynOptics also developed applications to help users design switches into their networks to yield better performance. For example, a user might leverage the SwitchMan package of traffic monitoring and design tools to determine whether higher throughput would be achieved by placing a switch in front of a given group of servers or an individual workstation.

The Chipcom and SynOptics moves, along with competing rollouts in the past several months, are attempts to tide over users with network bandwidth until higher speed LANs kick in, analysts said.

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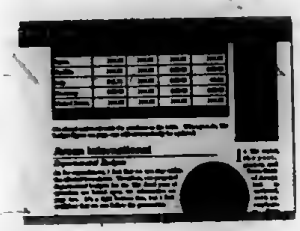
21. DESKTOP PUBLISHING You don't need another program to make things look great. Not when WordPerfect brings you advanced features like drag-and-drop text and graphics, customizable borders, even contour wrap-around text!

54. QUICKFINDER Now you can index files and with one key word or phrase, locate files instantly.

277. WYSIWYG EDITING With WordPerfect, you don't have to switch to "print preview" to see text, graphics, attributes — even headers and footers — exactly as they'll end up on paper. It's the way you can work all the time.

37. SCALABLE FONTS For the sharpest, clearest typefaces possible, WordPerfect 6.0 displays and supports TrueType™, CG Intellifont, Bitstream Speedo™ and Type 1 font technologies.



315. SPREADSHEET FUNCTIONS Now you can actually crunch numbers while word processing. Because nearly 100 spreadsheet functions are built right into WordPerfect 6.0.

82. COACHES WordPerfect is easier than ever. But when you want to try something new, this is like having a personal instructor for quick advice or step-by-step instructions.

86. EXPANDED WINDOWING These days, nobody has the luxury of working on one thing at a time. WordPerfect 6.0 lets you open and edit up to nine documents at once.

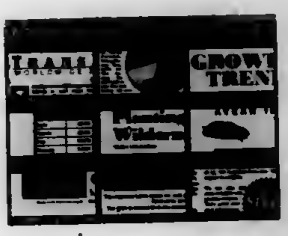
238. SELECTABLE MERGE Once, merging data was a difficult all-or-nothing proposition. Now WordPerfect lets you easily select the records you want to merge into letters or reports.

143. ENVELOPES & BAR CODES Addressing envelopes and labels is about as fun as licking stamps. But now you can do it automatically, even adding bar codes to speed the mail along.

256. FAX FROM YOUR DESK Next time, don't take that hike to the fax machine. With WordPerfect and a FaxBios, Class I, II or CAS compliant fax board, you can fax right from your PC.

The other 629 new features and enhancements to WordPerfect 6.0 include its GUI interface, color printing and sound board support, collapsible outlines, Undo, Button Bar, Grammatik and macro conversion.

But no matter how many new features it has, one thing stays the same: it's still WordPerfect.



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Tech Talk

Education grant

AT&T's University Equipment Donation Program last month awarded $7 million worth of NCR Corp. computer gear to 61 colleges and universities. Each donation included a server and workstations, some of them with multimedia capabilities. Since 1984, AT&T's program has donated nearly $287 million to educational institutions. This year, for the first time, AT&T also donated equipment to a non-U.S. site: The Academy for Technology and Agriculture in Bydgoszcz, Poland.

IBM Fellows

Honoring its own, IBM named six scientists IBM Fellows and awarded nearly $1 million to another 28 technical employees. Named as Fellows were James T. Brady at AdStar, IBM's information storage subsidiary in San Jose, Calif.; Donald M. Eigler at the IBM Almaden Research Center in San Jose, Calif.; Charles R. Hoffman at Networking Systems in Raleigh, N.C.; Martin E. Hopkins at the IBM Thomas J. Watson Research Center in Hawthorne, N.Y.; Peter M. Kogge at IBM's Federal Systems Co. in Oswego, N.Y.; Anthony C. Temple at Programming Systems, Warwick Laboratory in the UK.

3-D star search

In May, a team of astronomers at Johns Hopkins University won a $1.2 million contract from the U.S. Air Force to develop a three-dimensional computer model of the ultraviolet sky. In 1988, Johns Hopkins researchers created the first two-dimensional map of ultraviolet radiation from stars. The planned three-dimensional map, however, will be both an astronomical and computing challenge, because associating ultraviolet radiation with diffuse objects in the night sky — such as interstellar gas and the scattering of starlight off interstellar dust — is much more difficult to model. The data for the model will come from a European satellite and will be gathered at the National Space Data Center.

Rebirth of fractals

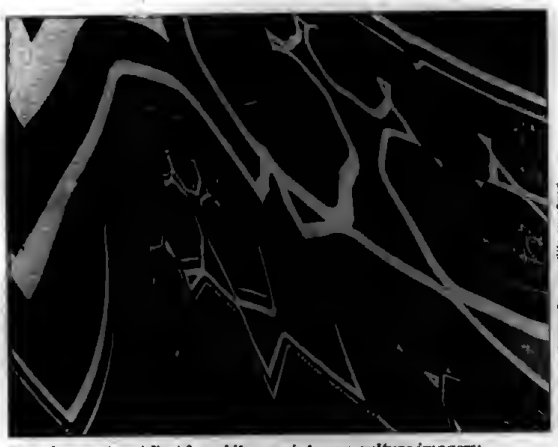
Fractal equations find raison d'etre in data compression

By Ellis Booker

A few years ago, the arcane mathematical subject known as fractal geometry enjoyed a brief pop-culture notoriety. There were colorful fractal posters, T-shirts and even games that allowed one to map exotic, swirling and infinitely changing fractal images on a PC screen.

At the same time, researchers were at work on a real-world use of fractals: data compression. In a superb example of a technology that was in the right place at the right time, fractal-based compression algorithms came just as electronic document imaging, multimedia and on-line, interactive video caught the imagination of the industry and users.

Very recently, in fact, applications have been developed that not only compress images via fractal equations but also use these fractal components as a kind of shorthand to identify the content of complex images. (Observers agree that some scheme for indexing complex images will have to be devised as users increasingly add images and video to multimedia applications.)



MICHAEL BARNSLEY, "FRACTALS EVERYWHERE" (ACADEMIC PRESS)

Fractal geometry *at first found its way into pop-culture imagery*

Sum of its parts

"The basic approach behind fractal encoding is to present an entire image in terms of parts of itself," said Alan Sloan, president of Iterated Systems, Inc. in Norcross, Ga., a pioneer in the development of fractal compression systems.

According to Sloan, the central idea of fractal compression is to partition an image into nonoverlapping pieces and then find one image region that, when properly transformed with things such as rotation and scaling, comes to resemble other parts of the image.

"The code word for [image region] A becomes the location of [image region] B and the transformation information of B," Sloan said.

An interesting difference between fractal-based compression systems and compression standards such as JPEG (a standard of the Joint Photographic Experts Group) is that more computation means better compression. For example, a supercomputer calculating a JPEG algorithm would derive the result faster than a PC would, with an identical outcome; a fractal compression done on a supercomputer would yield a significantly better compression than one done on a desktop computer.

It is hard to pin down the "average" compression ratio using fractals because compression is related to image quality, Sloan said. He said color maps can be compressed 60-to-1 and photos can be squeezed as much as 80-to-1 or 100-to-1. In an application in which only the broad outline of the original image is needed for analysis — for instance, satellite data — a compression of 800-to-1 is possible.

Currently, Iterated's system, which is used in products such as Microsoft Corp.'s Encarda CD-ROM multimedia encyclopedia, is a batch procedure. The "crunching" is done on supercomputers, although the images can later be "uncrunched" by a PC for viewing.

More efficient

Fractal image compression can reduce overall costs by cutting down media storage and transmission line needs

	Number of possible images stored on a 650M-byte CD-ROM	Time to transmit a single image over a 9.6K bit/sec. modem
[illegible]	275	[illegible] minutes
[illegible]	5,510	[illegible]
[illegible]	27,550	[illegible]
[illegible]	137,752	[illegible]

Source: Iterated Systems, Inc.

Show me the trains

Say you have several gigabytes worth of images, some of which contain pictures of railroad stations. How would you go about searching this massive resource for trains?

One way might be to use fractal representations of the objects in question to search for fractally compressed images, as Iterated Systems' MatchMaker does. The product is now in beta testing in the U.S. intelligence community.

At the moment, MatchMaker is a prescreening aid only. The system looks through a large number of fractally compressed images trying to match a key code (say, the fractal representation of a freight train) against codes in the compressed images.

MatchMaker someday may be teamed with an intelligent front end such as a neural network.

— Ellis Booker

Ever since Apple, IBM and Motorola formed their alliance, people have expected something big.

Well, it's not so big, but it's amazingly powerful.

	Intel Pentium™	PowerPC 601™
Frequency (MHz)	66	66
SPECint92	64.5	>60
SPECfp92	56.9	>80
Power (worst case)	16W	8W
Die size (mm²)	262	120

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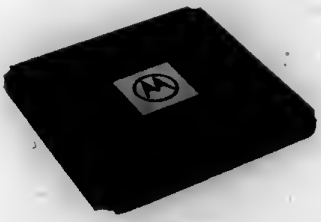
Speed comparisons are based upon press reports of performance of the 60MHz version of the Pentium as announced by Intel, and Motorola's announced simulation performance of the 66MHz version of the MPC601. Thermal comparison is based upon preliminary Intel specification for the 66MHz Pentium, and the performance of samples of the 66MHz version of the MPC601.



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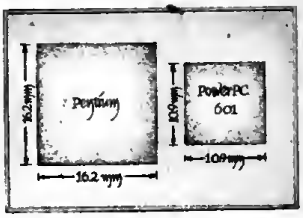

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Leash on life

Can an old dog learn new tricks? Probably yes, even from a little pup on occasions.

Take IBM. Now there's an old canine in desperate need of a new routine. And what better place to look for pointers (no pun intended) than among its own litter of independent, autonomous business units.

Specifically, the company as a whole ought to do what it should have done 12 years ago: Carefully study the operating philosophy of its PC division. In it, IBM might just find some of the keys it seeks for a brighter future and some relief from the dreadful position in which it has been mired for two years now.

It was 12 years ago this summer that IBM launched a subindustry with its IBM PC before there was a Dell or a Compaq or an AST or anything even called a clone. Within a short time IBM's PC division, operating as a truly autonomous unit in Florida, scored unprecedented market success.

Its success, however, was too much for the bureaucrats at IBM headquarters, who promptly reigned the division back into the centralized corporate web. Before you could say I-B-M, the PC unit fell into disrepair and disrespect.

Now the newly minted PC division(s) at IBM are at it again. They are feisty, numerous and turning out quality products that are sopping up market share. Moreover, the multiple PC subdivisions, soon to be selling everything from bargain-basement PCs to servers, will sell products that will compete with and even possibly cannibalize one another. That's fine with PC division head Robert Corrigan, who knows that if IBM doesn't eat some of its own lunch, some competitor surely will.

It sounds awful to think that way. But that's business today at the low end of the hardware market. It is also a precursor of the way the market will develop higher up, say at the level of high-end servers and extending into the midrange. The measure of IBM's success in the future will be the degree to which it submits to the stark but oh-so-obvious reality that smaller, cheaper hardware will replace the really profitable machines around which the IBM of old was built.

Today, however, you will find the same IBM salespeople selling both RS/6000s and AS/400s. If you were the salesperson, which box would you push? The RS/6000 for $40,000 or the AS/400 selling for several hundred thousand? Remember, you're a salesperson, not the customer.

Logic would dictate that the new management at IBM will react favorably to the well-earned success of its PC division and emulate its entrepreneurial spirit in other divisions. That logic escaped management a decade ago. This time, however, failing to learn some new tricks will most assuredly destroy what a short time ago was the most admired, profitable company in the world.

Bill Laberis

Bill Laberis, *Editor in chief*

Missed the point

In News Shorts [CW, June 14], you mention that SQLWindows 4.0 has been ported to IBM's Application System/400. This is incorrect. SQL Windows 4.0 Corporate Edition is a client/server front end that now works against the AS/400 and operates on client PCs running Windows. The Corporate Edition includes a component called TeamWindows that allows teams of programmers to work collaboratively on enterprise client/server applications.

The article "Visual basic stirs competition" in the same issue states that our $199 special promotion of SQLWindows Standard Edition is directed against low-priced Visual Basic. This is wrong. We rarely, if ever, compete head-to-head against Visual Basic. Our promotion has to do with increasing market share of SQLWindows against PowerBuilder in Microsoft/Sybase SQLServer accounts.

Daniel C. Berkowitz
Gupta Corp.
Menlo Park, Calif.

Graphic grumbling

I'm still scratching my head over the chart accompanying the VAR story on page 37 of your June 7 edition. What does it say, and how relevant is it?

The story was about how software companies are preparing to distribute their software directly to users through electronic channels. Did the chart refer to the costs vendors incur in selling each license? It was unclear.

Was it a reference to the costs faced by end users? If so, what users? Are you telling me there is a successful, technology-dependent company that hangs onto software or hardware for five years? Mark Halper's front-page story in the same issue dispelled the five-year depreciation fallacy nicely.

And how many companies in the world have 2,000 workstations? Once you stop looking at the sexy Fortune 500, the average desktop computer network supports about eight machines, and that's in the technology-rich U.S. The best information for me is easily understood and relevant to me, someone in the middle market of computing.

David Killilea
San Jose, Calif.

No quick fix

In "IT's coming" [CW, June 14], Bill Laberis comments on the apparent contradiction between the old "productivity paradox" and the new "productivity payoff."

The paradox is not that we invest in technology and wonder where the promised productivity went, but that we continue to look for the quick fix.

Technology by itself will never solve problems. People solve problems. Technology enables them to solve larger problems if, and only if, they have the necessary skills. The answer to productivity will always lie in training and skills development.

As for the new productivity payoff? It smells of the quick fix again. Unless it is backed by solid training and education, the theme of "productivity paradox" will be back with a vengeance within a year or two.

Peter de Jager
Brampton, Ontario

Word watch

I was delighted by Michael Cohn's complaint about the abuse and misuse of words such as "paradigm," "infrastructure" and "world-class" ["Don't talk to me about paradigms" CW, June 14].

But just below his column I found a piece by Elaine Rond. Her prose suffers from all the excesses that characterize the technodialect that Cohn is bemoaning. Note the mixed metaphor in: "The pendulum swings are knee-jerk reactions...." Then we have: "Technology choices at the business-unit level are frequently suboptimized...." There is no such word as "suboptimized" in the *American Heritage Dictionary*. She also uses "apportioning" when she should have used "reassignment." Could Mr. Cohn help me out with this dilemma?

Javaid "Jay" Qazi

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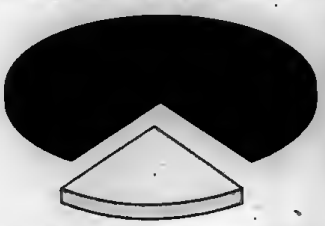

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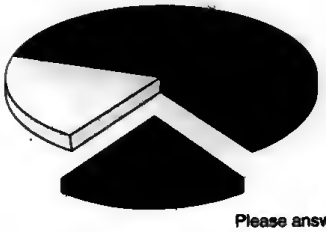

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Stealth beta

W. D. Riley

Purchasing a beta application disguised as production software is like getting carjacked and then pressed into service as the thief's chauffeur.

Phrases like "developers' release" and "early availability" simply don't convey the right message. They should have a picture of a bomb on the box and a suicide pill taped to the installation disk. That way, when your clients start losing their data, you can take the honorable way out while they're still forming a mob at your office door.

Frankly, I don't know anyone in his right mind who would pay good money for a "test" product, that is, if he knew that was what he was buying. I'm sure the people (me included) who bought OS/2 Version 2.0 a year ago thought they were buying production software. The same goes for the poor souls (me included again) who stuck with Ashton-Tate through the early dBase IV years.

In both cases, what we got was a thinly disguised beta version. OS/2 had so many patches that I don't know anyone who ever caught up with them.

Anyone remotely involved in the maintenance and installation of networks knows there are plenty of headaches to go around. No matter how "polished" the application, you're going to find a few bugs. But the difference between finding a few bugs and acting as a patsy for some company that just wanted to beat its competitors to market is the difference between flying United Airlines and the NASA space shuttle. In one case, you're paying good money to get from point A to point B; in the other, you're simply being strapped into the nose of a rocket with no flight attendant or peanuts.

Bob Pennell/IFG

I've been around this business for a while, and I've seen some really shady practices. But I was shocked when I found out about this little shell game. It reminded me of the time Cadillac decided to put Chevy engines in its cars without telling its customers. Now we're paying for unfinished software, and the manufacturers think they're giving us a break because they charge less for the privilege.

The jury is still out on Microsoft's Windows NT and OS/2 Version 2.1, but after paying good money for this latest release of OS/2, I'm going to be mighty upset if I find out it's no better than the last effort.

My only consolation is the fact that I bought my copy from a large software retailer. I think manufacturers are smart enough to realize that playing with their own reputation is one thing, but playing with the good name of another company is something else altogether.

Let me make this perfectly clear to software manufacturers: The people who buy your products are not going to stand for this. If you're giving your product away, you can do what you want. In fact, if you tell people it's a free beta version, they will line up to help you test it. But, if you're asking for money, we want something that works.

Riley is the microcomputer support manager for the City of Hope National Medical Center in Duarte, Calif.

We're all bozos on this bus

COUNTER-INFORMATION *by* Michael Schrage

True story: As a naive new hire at the *Washington Post* a decade ago, I was furiously typing a story on our Raytheon computer system in a bid to beat deadline. Nearly finished, I called out to my editor, "I'll be done in five minutes!" He yelled back, "Don't bother. I've already edited your story and sent it on to the copy desk."

Using a special "editors-only" function, the human reptile had digitally replicated my story and finished it off himself. I publicly cursed him and privately swore that, as God was my witness, I would only write stories in the "personal" mode, the one that denied access to meddlesome editors.

Another true story: The *Los Angeles Times* bureau in Washington, D.C., has a network configuration that effectively prevents its correspondents from filing their stories directly to Los Angeles. Stories must be routed through the editors' desks at the bureau. The Washington editors don't like to be bypassed, and they've got the software to enforce it. This annoys more than a few reporters.

Last true story: On the WELL (the Whole Earth 'Lectronic Link) bulletin board on CompuServe, participants now have the option to slap on a "bozo filter" to block comments made by people they consider trite, boring or a pain-in-the-pixels. Whenever you log in to the WELL conversation, your bozo filter flashes to let you know when you're screening out undesirables.

I sometimes wonder if mischievous sysops ever let people know how many bozo filters they trigger. . . . Am I being bozo filtered? Or am I just being paranoid?

What all these true network stories have in common is that they are more about power and politics than information and ideas. The millisecond I realized what my editor had done, my view of the newsroom network darkened into defensiveness. The instant I heard about bozo filters, my sense of WELL comity and community changed.

Issues such as who owns "your" E-mail and whether networks should allow anonymity are merely probes to the larger question of whether networks do a better job of social engineering than information systems management. More explicitly, should MIS (what a misnomer!) play an explicit role in using technology to better manage organizational values — or should they run, not walk, away from such combustible responsibilities?

Frankly, I've grown a little tired of the E-mail Eichmanns who "are just following orders/specs" when they install networks that make it easy for top managers to browse through other people's files.

But they're not other people's files; they're the company's files! If you say so. . . . I think it's unprofessional — and unethical — to offer LANs and WANs without broad consultation and discussion of their social implications.

Should a company offer bozo filters on its networks? Should it energetically promote their use? These aren't simple questions: I could make an excellent case either way. But I can tell you for a fact that when the rumor circulates (and one will) that, *whisper, whisper,* the boss now bozo filters his vice president of marketing, the politics of that firm will change.

Please don't consider this a plea for new media ethics or corporate compassion. In 1993 America, ethics arguments tend to be persuasive only when backed up by the threat of a lawsuit. Similarly, appeals to compassion aren't compelling at a time when people live in fear of being outsourced to save someone's budget.

Consider this an appeal for pragmatism: If networks breed roughly the same number of unpleasant surprises as pleasant ones, people won't trust them or one another. When politics, not productivity, is seen as the crucial design criterion, nobody will care what client/server architecture you choose.

Yes, human beings are "information processors," but anyone who treats human beings like information processors has a pretty warped notion of what it means to be human. Bozo filter them.

Schrage is a visiting scholar at the MIT Sloan School and the Laboratory for Computer Science. His Internet address is schrage@media-lab.media.mit.edu.

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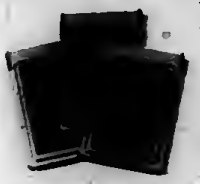

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Recording company stays on top of its numbers with EIS

By Michael Vizard
NEW YORK

Being an information systeme manager in the record and publishing industries during a tumultuous period of acquisition and growth has made Claudia Longo one of the most sought after people at the Bertelsmann Music Group (BMG).

In the last five years, this U.S. arm of a German parent organization, The Bertelsmann Group, has acquired the RCA Records and Arista recording labels in addition to the Bantam, Doubleday and Dell book publishing operations. And those operations are now being pulled together under one roof in a recently acquired 44-story office building near Times Square in New York, which last week was the site of a grand opening party that drew the likes of author Norman Mailer and jazz artist Kenny G.

ON SITE

Bertelsmann Music Group
New York

Profile: Privately held German conglomerate that expects to have revenue of $2.6 billion in fiscal 1993 from diverse recording and publishing interests, including RCA Records, Arista Records, Doubleday, Bantam and Dell book publishers.

Challenge: To provide top-level managers with a system that analyzes trends across business units.

Technology: Comshare's Commander EIS and One-Up multidimensional spreadsheet.

Overseeing business

To keep track of these business units, as well as two other recording labels, song publishing operations, children's music video offerings and a direct catalog sales business, all major executives at the BMG use the Commander executive information system (EIS) and the One-Up multidimensional spreadsheet software developed by ComShare, Inc.

As a project leader in the IS department at the BMG, Longo is responsible for developing applications, using Commander and One-Up, that will make it easy for BMG executives to analyze sales trends across business units operating in 39 countries.

Using this system, BMG executives are able to decipher the extent of a trend using data that is downloaded from an IBM DB2 database running on IBM mainframes in Indianapolis using Comshare's System W decision support software.

"For instance, we know that stores are already ordering country singer Clint Black's next album by the buckets," Longo said.

Companywide access

To accomplish this, Longo has installed 78 copies of One-Up in every major BMG office. Data entered into this spreadsheet is then polled by the IBM mainframe using an electronic mailbox service offered by General Electric Co. Daily sales information is downloaded into the Commander EIS systems that have been deployed on 20 DOS-based PCs in the offices of the company's top managers, including the company's chairman in Germany.

"I wish we could push the system further down the organization, but we just don't have the resources to do that," said Longo, who has two assistants to help deploy and main-

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Portable challenges

IS managers find unexpected problems as PC users go mobile

By Michael Fitzgerald

■ Outfitting a business unit with notebook computers might at first seem like nothing more than just extending the desktop environment, but users will tell you that is not the case.

"You have to think about the world of mobile computing when you design your systems because systems must be as functional in the field as in the office," Sheldon Laube, national director of information technology at Price Waterhouse, said at the recent Dataquest, Inc. Mobile Computing Forum.

Price Waterhouse may represent the cutting-edge fringe of the portable world because 85% of the PCs it buys are notebook computers.

Also, the company's newer office buildings are structured like hotels, where employees who normally work at client sites call ahead to reserve an office.

Still, Price Waterhouse's needs seem to reflect what companies with numerous mobile users run across everywhere.

Apples and oranges

"The mobile paradigm is as different from PCs as PCs were to minicomputers," said J. Gerry Purdy, a Dataquest analyst. "Workers in general look to be more dispersed, so how do you do everything the same, or even better, on the road as in the office?"

The issue, according to Laube, is how to manage knowledge so end users are not constantly "reinventing the wheel" by doing work that has been done elsewhere in the organization, yet is not generally available.

IS managers at the show agreed that this was a major problem that many of them were just starting to get their arms around.

"We do 150 research projects a year, and each one becomes a little database in and of itself, so we don't have a good way to use all the information we have," said Randall Huber, director of information systems at Audience Research & Development in Dallas.

Huber added that when his company's researchers go on the road, even basic data management becomes a problem.

"We're still trying to do just simple things like coordinate addresses and phone numbers," he said.

Even vendors agreed that data management for a portable environment is thorny.

"Our corporate fleet users are still working on security issues, on how to keep up databases and on issues as small as how do you track removable hard drives," said Steven Andler, product marketing director at Toshiba America Information Systems, Inc.

Price Waterhouse's Sheldon Laube: *"Systems must be as functional in the field as in the office"*

Much of the focus centers on communications, particularly wireless communications. All sides agreed that wireless is simply not capable of supporting heavy-duty data needs right now [CW, June 28]. Future data types such as voice support or video will clog even land lines.

"This is a huge issue. How do you get big amounts of data out to the sales force?" said Alan J. Soucy, vice president of product strategy and advanced planning at Zenith Data Systems.

How to manage portable computers has become a hot button, in part because corporations such as Price Waterhouse are shifting their buying patterns from desktop PCs to notebooks.

Most analysts said they think personal digital assistants and other small, mobile computers will only increase the need for IS to figure out how to get information to end users.

Staying up to date

At Turner Corp., a large multinational construction company based in New York, "We've started to get really serious about notebooks as desktop replacements, and data management is something we're working on right now from a lot of angles," said William I. Lodge, project leader at Turner.

Lodge said the company was working on ways to keep electronic-mail connections and Lotus Development Corp.'s Notes groupware program, among others, up to date.

Better data throughput and improved communications clearly are important, and work proceeds on improved land-line communications as well as the brave new world of remote wireless computing.

"We are going through a reconstruction of the communications infrastructure to accommodate the mobile paradigm, and users definitely need to think about this before they implement systems," Purdy said.

At the same time, users such as Laube charge that the remaking of the communications infrastructure falls short of their needs.

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Briefs

Switch announced

Microsoft Corp. named Patty Hatunen vice president of the consumer division, effective next month. Her job as vice president of product support and services will be filled by Deborah Willingham, now general manager of end-user support.

OS/2 support offered

Unisys Corp. has agreed to support OS/2 Version 2.1 on its PW2 Advantage and Advantage Plus PCs. Unisys will also offer OS/2 2.1 as an option on its A series mainframes.

NT applications

The first effect of Microsoft's Windows NT push against Unix was seen at the recent Architectural/Engineering/Construction Systems conference in Anaheim, Calif. Seven software vendors that earn most of their revenue on Unix and OpenVMS workstations demonstrated their applications running under NT. They included Intergraph Corp., Timeline, Inc., Intellution, Inc., Graphisoft, Inc. and Autodesk, Inc.

Firm inks pact

4th Dimension Software Ltd. in Tel Aviv has signed an OEM pact with Pensant Systems, under which 4th Dimension will include support for Pensant's Advanced Printing Function technology in its Control-D/PC for Windows report writer.

Kaleida works to build market for multimedia

By James Daly

The slow creep toward multimedia enjoyed a microburst of momentum recently when Kaleida introduced a set of services for developers crafting cross-platform multimedia titles.

Analysts, however, noted that the link between multimedia — the blending of audio, video and animation into traditional data presentations in an interactive manner — and the needs of the average computer user remains elusive and could represent a serious marketing challenge.

"I think a lot of these companies still have a lot of evangelizing to do," said Robert Anderson, a senior analyst at A. O. Smith Automotive Products Co. in Milwaukee. "They need to better explain how it would fit into our organization and exactly what it could do to help us better perform our jobs."

Expanding the market

By offering multiplatform compatibility via its ScriptX programming language, Kaleida officials said they hope to create more market opportunities for multimedia developers and grow the market beyond its current limited use. For now, multimedia use seems to be confined to the areas of marketing or training.

ScriptX is an object-oriented multimedia description language that will allow developers to craft one title that will work on many kinds of devices, from desktop PCs to consumer electronic devices. ScriptX is currently in a "pre-alpha state," a Kaleida spokesperson said, with availability not expected until spring.

So far, multimedia applications have made limited inroads in the corporate world. "IS still tends to be data- and applications-driven, and I think it will remain so for some time," said Brian Comnes, manager of the information center at DHL Airways, Inc. in Redwood City, Calif.

One notable exception is BC Hydro in Burnaby, British Columbia, where information systems manager Eric Joa recently used a sophisticated multimedia presentation to explain to management some recent progress on a complex $10 million client/server networking project that will service 600 users.

"Directors can sometimes be very nervous, but multimedia made it very easy to describe all the complex things we're doing," Joa said. "I think they're a lot more comfortable now."

Repair help

Another interesting use of multimedia occurred at Union Carbide Corp. in South Charleston, W. Va., where repair personnel tap into nearby computer monitors to watch video descriptions of the correct ways to fix complex machinery.

Kaleida officials said they hope the introduction of the cross-platform tools will free developers to create more applications. Currently, financial constraints force many developers to limit their titles to a single platform. But without a single, widely accepted standard for these platforms, it is tough to get user acceptance.

Developers can sign up for the Kaleida Developer Program at either the Vanguard or the Associate level. Vanguard members will receive both Alpha and Beta ScriptX Software Development Kits, along with four days of training and consulting. Associate members will receive Beta ScriptX Software Developer Kits, training and consulting on a for-fee basis.

Free software tracks errors

By Christopher Lindquist

As reports of problems with Microsoft Corp.'s DoubleSpace disk compression continue to fill CompuServe's forums, a utility software vendor is offering a free version of its product designed to check for potential problems before they cause data loss.

TouchStone Software Corp. in Huntington Beach, Calif., is supplying a no-cost copy of the CKMedia applet from its CheckIt Pro hardware diagnostics software. The applet performs media tests on hard drives to determine whether bad or questionable sectors or clusters of the disk are being used. It also checks for invalid characters in file names and for cross-linked files, both of which can lead to difficulty with DoubleSpace, according to the company.

Microsoft has reportedly removed CKMedia from the MS DOS forum but the utility is still available from the name DOSPRG.ZIP in the IBMSYS forum

If any problems are discovered, an information file informs users how to make their system as safe as possible for data compression.

The issue came to TouchStone's attention when three employees had hard-drive failures after loading DoubleSpace. A search of CompuServe indicated that other people were also experiencing problems, according to Shannon Jenkins, company president and chief executive officer. "We deduced that there was a problem that users were not aware of — the fact that they should be testing their drives," she said.

As a result, the free version of CKMedia was released to help users identify potential conflicts and to educate them about the need for periodic system diagnostics. "I think people are willing to accept that you can't drive your car 20,000 miles without changing the oil," she said, noting that users should treat their computers in the same manner.

Recording firm

CONTINUED FROM PAGE 37

tain EIS applications.

According to Longo, the major benefit of having the Commander EIS coupled with the One-Up spreadsheet is that they let the company's executives easily analyze and compare data.

"They use it to compare business plans and forecasts with historical data and actual sales figures across about 550 line items. And because we're an international company, you have to be able to provide that data in a format that matches their local currency and accounting procedures," Longo said.

Because of this, the BMG needed a spreadsheet that was tightly linked to an EIS, rather than just an off-the-shelf multidimensional spreadsheet, according to Longo.

In the immediate future, Longo said, her goal is to upgrade users of the EIS systems to a Windows operating environment. "Our fiscal year begins in July. You'd be surprised how much money in the department becomes available to buy hardware around here in July," Longo said.

She added that she expects it to be much easier to program under Windows as well. "What used to take about 540 buttons is now going to take three buttons to create," Longo said.

In conjunction with that effort, Longo plans to tie the BMG's systems into a new numbering scheme for recorded music that has been adopted by the recording industry.

"Most of the U.S. and Canada uses a common numbering scheme, but getting the international units up to speed has been a problem because of different languages and numbering schemes," Longo said.

Airlines curtail PC use

By Ellis Booker

United Airlines recently became the latest carrier to limit passenger use of personal electronic devices (PED), including PCs, during takeoffs and landings.

Chicago-based United said its policy, which went into effect July 1, is a precautionary measure "to address the possibility of such devices causing electromagnetic interference with cockpit navigation or communications systems."

Passengers will be told not to use personal electronic devices while the plane is on the ground or when it is flying below 10,000 feet.

Similar restrictions have been adopted by Northwest Airlines, Delta Air Lines and American Airlines. On June 1, Japan's nine airlines established a ban. All airlines outlaw the use of signal-generating devices such as cellular phones and radio-controlled toys.

Since 1986, there have been about 40 anecdotal reports from U.S. airline pilots about navigational and communications systems being affected by PEDs.

Aircraft navigation and communications systems operate in the 108- to 118-MHz and 118- to 136-MHz radio bands, respectively.

Under the Federal Aviation Administration's direction, RTCA, Inc., a not-for-profit federal advisory committee, is currently reexamining its 1988 report and recommendations on PEDs. RTCA expects to issue an interim report in October.

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GA-1304

Jeffrey Henning

Open systems challenges

In the mid-1980s, users hungry for PCs were satisfied with whatever vendors were willing to serve up. Often that amounted to just two combination platters — the Apple Macintosh and the IBM-compatible PC. But users' palates have grown more sophisticated. Now they have a hankering for more choices, and they want more open systems.

True, today's IBM-compatible PCs are more open than ever before, with operating systems available from multiple vendors and — in a dramatic change from the past — with X86 chips available from multiple vendors. But users want even more.

They want to avoid being locked into one vendor, should that vendor offer too narrow a product line, be slow to innovate, fail to provide adequate pricing and service or — in the worst case — go out of business. As a result, users want even more freedom of choice than they have today: They want to be able to run their PC and workstation software on any hardware platform.

Users want applications to be as interchangeable across operating systems as cassettes are across tape players.

To meet this need, vendors are implementing a new layer above the operating system — the application platform — to enable systems to run software designed for other operating systems.

Windows applications platforms are or will be available for OS/2, Novell's UnixWare, Sun's Solaris and other Unix variants, and a Macintosh application platform will be available for Apple and IBM's new Unix variant, PowerOpen.

> **Users should choose hardware vendors willing to act as system integrators.**

Any combination

By the late 1990s, users will be able to deploy almost any application on any operating system on any CPU architecture, in a system from any vendor. The next decade of computing will be driven by processor independence and operating system independence — in other words, vendor independence.

Users will be free to almost instantly discontinue business with a vendor without jeopardizing their information technology investments. A user organization that loves the Macintosh interface will no longer be beholden to Apple for its hardware but free to buy hardware from IBM and others.

A company that has standardized on Windows applications will still be able to use that software on a more powerful operating system, whether it be Microsoft Windows NT, OS/2 or Unix. Users will have more opportunities to determine exactly which configurations will provide them with a competitive advantage.

Dig deeper

In order to fully take advantage of their new opportunities, users will need to research various solutions in more detail, placing special importance on the ability of products to work together.

With all this freedom comes responsibility, of course, and users will face more bugs and more support problems as they create unique environments that strain the ability of products to interoperate.

Worse, users will experience their greatest frustration as vendors pass the buck and respond to crises by saying, "It's not a problem with our product; talk to your other suppliers."

Users will have to pressure vendors to talk to their other suppliers and will have to take their business elsewhere when vendors are not up to the task.

Despite having the freedom to switch, users will actually want to work with fewer vendors.

This may seem counterintuitive, but while users like the freedom to choose, they want that freedom mainly as an option, to keep suppliers on their toes. For the most part, users want to build long-term relationships with their suppliers.

Golden handful

With PCs used in ever more critical applications, users will want to work with that handful of companies that can support them across the enterprise and can help them manage the complexities of heterogeneous environments.

As a result, users should seek out hardware vendors willing to act as system integrators and flexible enough to integrate hardware, software and peripherals from competing vendors according to users' specifications.

It is a brave new world. Vendors are changing from gourmet chefs to short-order cooks. The days of the combination platter are over, and the PC market is becoming a buffet table: Users hungry for PC meals a la carte.

Henning is a senior industry analyst at BIS Strategic Decisions in Norwell, Mass.

Peripherals

Seagate Technology, Inc. has announced the 2.5-in. 170M-byte ST9190AG and the 127M-byte ST9140AG disk drives.

According to Seagate, the disk drives provide up to 35% higher capacity and 45% lower power dissipation than other 2.5-in. products now available.

Both the ST9190AG and the ST9140AG feature an industry-standard AT interface, 120K-byte multisegmented adaptive cache and a 16-millisecond average seek time, the company reported.

Mean time between failure is said to be 300,000 hours.

The disk drives use Seagate's SafeRite shock-sensing system.

The ST9190AG costs $390, and the ST9140AG costs $325.

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Software application packages

Altsys Corp. has announced Virtuoso 2.0, an Adobe Systems, Inc. PostScript design and production program for Microsoft Corp.'s Windows NT.

According to Altsys, Virtuoso is the first graphics program to incorporate advanced PostScript drawing, page layout, text creation/editing and production capabilities into a single program.

A comprehensive spell checker, an on-screen font panel and a new path utility function have also been included, according to the company.

The Windows NT version will be available during the third quarter of this year.

A floating network license for Virtuoso 2.0 costs $695.

▶*Altsys*
269 West Renner Pkwy.
Richardson, Texas 75080
(214) 680-2060

Cadman Corp. has introduced ViewPort+, a software program that allows users to instantly view specifications, drawings and other forms of data.

ViewPort+ offers the ability to batch process files, view scanned images, function on any DOS network, support 61-character file names, link text with graphics and support multisheet drawings.

ViewPort+ costs $595 for View-Only capability and $795 for View-and-Mark-up capability.

▶*Cadman*
Suite 306
223 E. Thousand Oaks Blvd.
Thousand Oaks, Calif. 91360
(805) 371-0424

Utilities

Q-Soft, Inc. has started shipping Smart Palette, a Windows utility that provides floating icon tool palettes for any Windows 3.1 application.

Sample palettes are provided for use with common Windows programs such as File Manager, Program Manager, Windows Write, Paintbrush, Cardfile, Calendar, Terminal and Notepad.

A bit-map editor called Smart Paint allows users to create their own bit-mapped images or change the existing samples for use on the Smart Palette buttons, the company said.

Smart Palette costs $99.

▶*Q-Soft*
Suite 33C
16 Winter St.
Waltham, Mass. 02154
(617) 899-4685

Macintosh products

No Hands Software has started shipping Common Ground 1.0, an electronic document exchange and distribution program for the Macintosh.

With Common Ground, users can create documents and view, search or print them without needing to make fonts or applications on their systems, the company reported.

Documents created in any application can be turned into a platform-independent file format with DigitalPaper, a technology included with the product.

A Macintosh running System 6.05 or higher with a minimum of 700K bytes of free memory is required.

Common Ground costs $189.95

▶*No Hands Software*
Suite 220
Belmont, Calif. 94002
(415) 802-5800

The Triangle Software Division of Datawatch Corp. has released Virex 4.0, a feature upgrade to the company's Macintosh antivirus software.

Virex 4.0 includes a simplified installation procedure, a new color interface, an enhanced network installer, drag-and-drop diagnosis, support of Apple Events and diagnosis of active and open files.

The product offers a feature called ScanStaller that scans files and disks for the presence of known viruses, according to the company. Before the program is installed, ScanStaller fixes any infections.

One unit of Virex 4.0 costs $99.95.

▶*Datawatch*
Triangle Software Division
3700-B Lyckan Pkwy.
Durham, N.C. 27707
(919) 490-1277

Applied Engineering has introduced the FastMath LC III, a math coprocessor.

The FastMath LC III was designed to increase statistical applications on the Macintosh LC III.

The product consists of a 68882-25-MHz floating-point unit that plugs into the coprocessor socket on the Macintosh LC III. It has the ability to accelerate math-intensive programs, including scientific functions, spreadsheets and computer-aided design programs.

The FastMath LC III coprocessor costs $109.

▶*Applied Engineering*
2210 Beltline
Dallas, Texas 75234
(214) 241-6060

Why PowerBook is popular with people who use Macintosh.

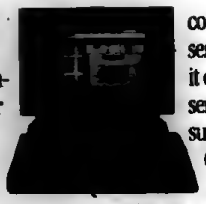
Flexible choices. *Five all-in-one models with built-in floppy drives provide a range of choices for screens (color, black-and-white or gray-scale) and processor speeds. Two PowerBook Duo models turn into powerful desktop systems when used with a Duo Dock.*

Colorful possibilities. *Mobile presentations are easy with a color PowerBook, or by using built-in video-out to drive up to a 16-inch color monitor.*

Quick service. *A toll-free repair hotline gives PowerBook users access to the fastest possible service, anywhere in the U.S.*

Easy data transfer. *PowerBook easily shares files with a desktop Macintosh over a network. It can also connect directly in SCSI mode, transferring files almost as quickly as an external hard disk.*

Fully expandable. *Most PowerBook models have a SCSI port that lets you connect to up to seven external devices, such as a scanner, CD-ROM drive or Ethernet interface.*



As people search for new ways to boost productivity outside the office, more and more are choosing Apple® PowerBook™ computers. And not just because of the familiar benefits of the Apple Macintosh® system.

Unlike other notebook computers, PowerBook is designed for the way people actually work when they are away from their desks.

Beyond the walls of the office, they need to stay connected to their network for access to servers and e-mail, and PowerBook makes it easy. They need to make full-scale presentations, and PowerBook provides built-in support for color monitors, sound and QuickTime™ software-based movies. They need to be able to send and receive faxes, and PowerBook can make that simple, too.

In fact, with its award-winning design, PowerBook makes it easier to get any kind of work done, anywhere.

Even people who need both portability and full expandability find a solution in PowerBook. Because the PowerBook Duo™ System offers the best of both worlds — a notebook computer that transforms itself into a powerful desktop computer.

Clearly, organizations using Macintosh have helped make PowerBook the nation's best-selling notebook.

But they haven't done it alone.

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Why PowerBook is popular with people who use MS-DOS and Windows.

One drive fits all. *Using software included in the optional PowerBook/DOS Companion, the built-in Apple SuperDrive™ floppy drive can read/write MS-DOS and OS/2 disks – so moving files between platforms is effortless.*

Easier support. *PowerBook requires less training than other notebooks. So you can spend less time helping frustrated users, and more time doing your job.*

Higher productivity. *PowerBook makes it easy to do more, so people can get more done, using remote access, faxing and e-mail.*

MS-DOS-friendly. *The optional PowerBook/DOS Companion package gives you the necessary software and cables to work with MS-DOS files, printers and monitors you already own.*

Preserves your investments. *PowerBook is designed not just to work with existing desktop equipment, but to help you get the most out of it.*

PowerBook has also become the notebook computer of choice in some rather surprising places. Not only because it's designed for the way people work outside the office, but because it works so well with computers running MS-DOS or Windows.

The optional PowerBook/DOS Companion™ lets PowerBook users access MS-DOS files from most popular business applications, connect to VGA and SVGA monitors and work with over 1,000 different printers.

So whether people find themselves working in a branch office, a client's office or their own office, it's always business as usual.

PowerBook is designed so people can easily share files with colleagues who use Macintosh or MS-DOS computers. Without a dedicated server, it can connect directly, over the office network or over the telephone lines. It also gives people a simple way to retrieve data from mainframes and minicomputers.

People experienced with Windows applaud the simplicity of PowerBook. They also appreciate a notebook that integrates essential mobile-computing features like networking, video-out and file sharing.

And they appreciate a notebook computer that finally gives them the power to get the most out of their existing investments. The kind of power that's easy to get used to. The power to be your best.™

Apple

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According to IDC (International Data Corporation), the installed base of internetworking devices has been growing at an average annual rate of over 65% for the past four years.

With this explosive growth comes the need for network management systems to simplify management operations. The SNMP (Simple Network Management Protocol) has rapidly become the de facto standard for these management systems.

In this information packed one-day seminar, you will acquire a thorough understanding of the elements of an SNMP-based network management system, how to implement SNMP with your internetwork, plus the various enhancements such as the new message formats, improved error codes and security with SNMP version 2.

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- Learn the details of the three key elements of the Internet Network Management framework: the SMI, the MIB and the SNMP.
- Survey the key elements of Abstract Syntax Notation One (ASN.1), the language used to define SNMP message formats.
- Understand how TCP/IP and the related Internet protocols such as UDP and IP support SNMP.
- Learn how test equipment that supports the Remote Monitoring (RMON) MIB can assist with distributed LAN management.
- Understand the enhancements found in SNMPv2, such as Manager-to-Manager communications, the GetBulk Protocol Data Unit, and enhanced Security.
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Users tread lightly in client/server water

Financial manufacturing applications making progress, but slowly

By Kim S. Nash

While underautomated human resources departments have become a proving ground for prepackaged client/server software, financial and manufacturing groups are starting to see similar applications.

However, recently released products, and some that are due soon, from Dun & Bradstreet Software, PeopleSoft, Inc., SAP America and other firms sidestep some sticking points in moving to client/server, users and analysts said.

By and large, the applications are too small and focused to effectively convert the masses to client/server, they said.

The products are workable in departmental, decision-support-type areas, such as human resources. However, moving to heavy-duty on-line transaction processing means users are looking for help with support, administration and understanding how the conversion from mainframe-based systems wrenches business practices.

"It can get ugly," said Brian Summer, worldwide director at the Software Intelligence Group, a market research arm of Andersen Consulting.

A large Canadian firm that Summer is working with, for example, wants to move a mainframe-based general ledger system to a client/server setup of PCs and Unix machines.

"That involves running through 1.1 million journal entries per day. We'll see whether client/server is ready for that," Summer said.

Make no mistake: Current client/server packages do fill several needs, such as making better use of less expensive millions of instructions per second in PCs and workstations and giving end users reporting tools to free glass house staff for other work.

However, in a chaotic, infantile market, users have to take extra care to distinguish between problems caused by new software and those resulting from networking equipment or an information systems staff and users struggling with the changes.

Hot seat

"We don't have a raging inferno, but there's a brushfire out there every day," said Jay Stright, manager of operations and technical planning at the human resources and employee services unit of Chevron Corp.

Stright said he is generally satisfied with the progress of several projects under way to migrate human resources for about 400,000 current and former employees from IBM mainframes to a series of local-area networks linking Intel Corp. 1486-based PCs and servers.

To extinguish the fires, he counts on a close relationship with Tesseract Corp., a software maker in San Francisco.

"Chevron tries to identify companies to have a strategic relationship with, where we can influence their direction and they can work with us, too," Stright said.

New client/server financial, human resources and manufacturing applications have specific strengths and weaknesses. For example, some so-called client/server applications are simply Unix ports of mainframe- or minicomputer-based systems. D&B Software's Open Millenium line and several Computron products are of that genre.

"Some of these things may not even have a GUI," said Dick Dionne-Keay, an analyst at Summit Strategies in Boston. "Client/server certainly has many meanings, doesn't it."

Client/server, *page 48*

Standards spelling

Boston consultancy Advanced Manufacturing Research is devising standards for client/server manufacturing software that supports multinational users and contracts suppliers and customers with manufacturing companies.

Price plummet

By now we know that client/server is not cheap, but software prices will drop during the next 18 months, analysts said.

Along with the steep costs of installing network software and hardware, PCs and workstations, first-time client/server users have to shell out large sums for client/server software.

For example, a single human resources or financial module from Cyborg Systems, Inc. can run up to $360,000, depending on platform. PeopleSoft products start at $100,000 each, and the base price of D&B Software's new flexible benefits module is $98,000.

But new entrants and/or modified pricing from rivals will drive down these high tags, said Dick Dionne-Keay, an analyst at Summit Strategies in Boston.

FlexWare Corp. in Shelton, Conn., offers a financial package for between $15,000 and $100,000. "It doesn't have all the functionality of a PeopleSoft," Dionne-Keay said, "but that might be enough for some users." —*Kim S. Nash*

A SAMPLING OF NEW CLIENT/SERVER APPLICATIONS*

Arthur	CIM	Windows, OS/2, Unix; SQL Server, Oracle	$25,000 - $750,000 Shipping
CA	CA-HRMA	Windows, OS/2; DB2	$85,000 Expected Q3 '94
Cyborg	Solution Series	Unix, NetWare; DB2, Rdb, Oracle	$50,000 - $360,000 Shipping
D&B Software	Financial Stream	Windows, DOS, HP/UX, DG/UX; SQL Server	To be announced in July
	HR Stream	See above	$88,000 + Flex module shipping, others Q4 '93
FlexWare	FlexPayroll	Windows, DOS, OS/2, NetWare, Unix; SQL Server, SQLBase	$5,000 - $100,000 Shipping
Integral	InPower HR	OS/2, NetWare; SQLBase	$50,000 + Shipping
PeopleSoft	PS/Financials	Windows, OS/2, Unix; SQLBase, DB2, Oracle, Allbase, Rdb, SQL Server	$100,000 + Expected Q4 '93
Platinum	Softool to Platinum	Windows, OS/2, NetWare; SQL Server	$10,000 Shipping
SAP	R/3	Windows, AIX, HP/UX, Ultrix; Oracle, Informix	$150,000 - $500,000 Shipping
Tesseract	Tesseract HR	OS/2, Windows; DB2	Expected Q3 '94

*excludes products that are simply ports of host-based systems

Insurer's financial model spawns profits

By Mitch Betts

As the insurance business became more complicated, Yasuda Fire and Marine insurance Co. in Tokyo found that the computer model it used to guide financial investment decisions was not keeping up.

Like many insurance companies worldwide, Yasuda is becoming more of a financial services firm as it issues a growing number of savings-oriented policies. The policies have a wide range of maturities and fluctuating interest rates.

So Yasuda teamed up with Frank Russell Co., an investment consulting firm in Tacoma, Wash., to develop a more sophisticated financial planning tool that could deal with all of those complications, as well as new government regulations for minimum capital reserves.

In essence, the challenge was to create a decision-support system that would tell Yasuda's investment managers how to invest their portfolio of assets in order to meet multiple and conflicting objectives.

The new Russell/Yasuda model enables the firm to produce a high income to pay the annual interest on savings-type policies without sacrificing the longer term goal of maximizing profits.

In its first year in action, the model increased Yasuda's income by $26 million more than would be expected using Yasuda's old methodology, without sacrificing total return, according to Kunihiko Sasamoto, deputy president of Yasuda.

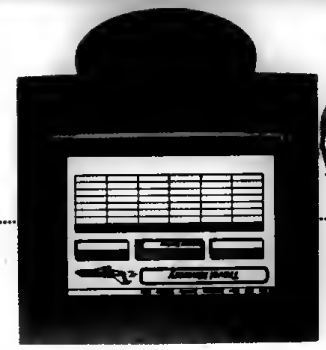
The higher income yield gives Yasuda a competitive advantage by allowing it to pay larger bonuses to savings-type policyholders. That helps the company retain existing customers and attract new ones, Sasamoto said in a prepared statement.

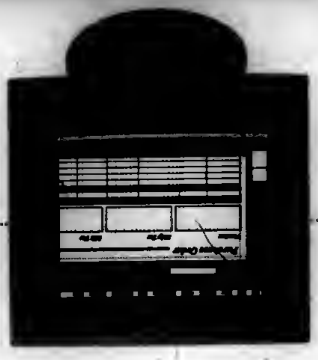
Award winner

Because of its breakthrough success, the Russell/Yasuda model recently won second prize in the prestigious Franz Edelman Award for Management Science Achievement competition, sponsored by The Institute of Management Sciences.

According to the award-winning technical paper, much of the model's benefit is derived from the fact that it paints a

Financial model, *page 48*





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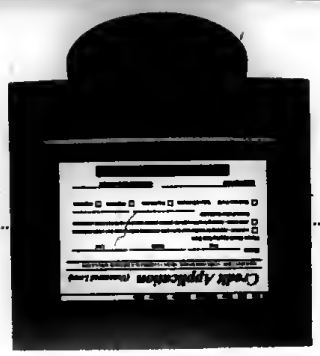

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WordPerfect

Users tread lightly in client/server

CONTINUED FROM PAGE 45

While the vendors duke it out, analysts offered assessments of some of the players.

Avalon Software, Inc. is one of the relatively few companies selling client/server manufacturing software. But distributed manufacturing is so new that few Avalon users have set up a full-fledged client/server operation, said Ted Rybeck, analyst at Advanced Manufacturing Research, Inc. in Boston.

Users must redesign how manufacturing is done, spreading out the tasks to different locations and people, Rybeck said. Plus, effective manufacturing systems must be tied to a company's financial programs. "That's a lot of client/server to throw at someone," Rybeck said.

D&B Software's strength is the work-flow tools in its client/server offerings, but the company is bogged down by a large installed base of mainframe customers who it must support, according to Summer.

Work-flow tools can help users identify and revamp business processes, providing at least an outline of what new systems should look like, he said. "That's where the real benefits of client/server come from — not just reautomating the old ways," Summer said.

As a young firm, PeopleSoft does not have to deal with demands from big iron customers, but it does have to convince potential users that it can play in a Fortune-class market.

Like D&B Software, PeopleSoft has to come through with financial modules promised for this year (see chart page 45).

Financial model

CONTINUED FROM PAGE 45

more realistic picture of Yasuda's complex business environment.

"In the past, for computational reasons, simplifying assumptions had to be made. Today, the power of workstations and the mathematics of stochastic programming make it possible" to develop a realistic business model and solve complex problems in a reasonable time frame and cost, the paper stated.

The financial model, which is programmed in C and Fortran and uses IBM's Optimization Subroutine Library, runs on an IBM RISC System/6000 Model 530. Depending on the number of scenarios, the system arrives at a solution in one to three hours.

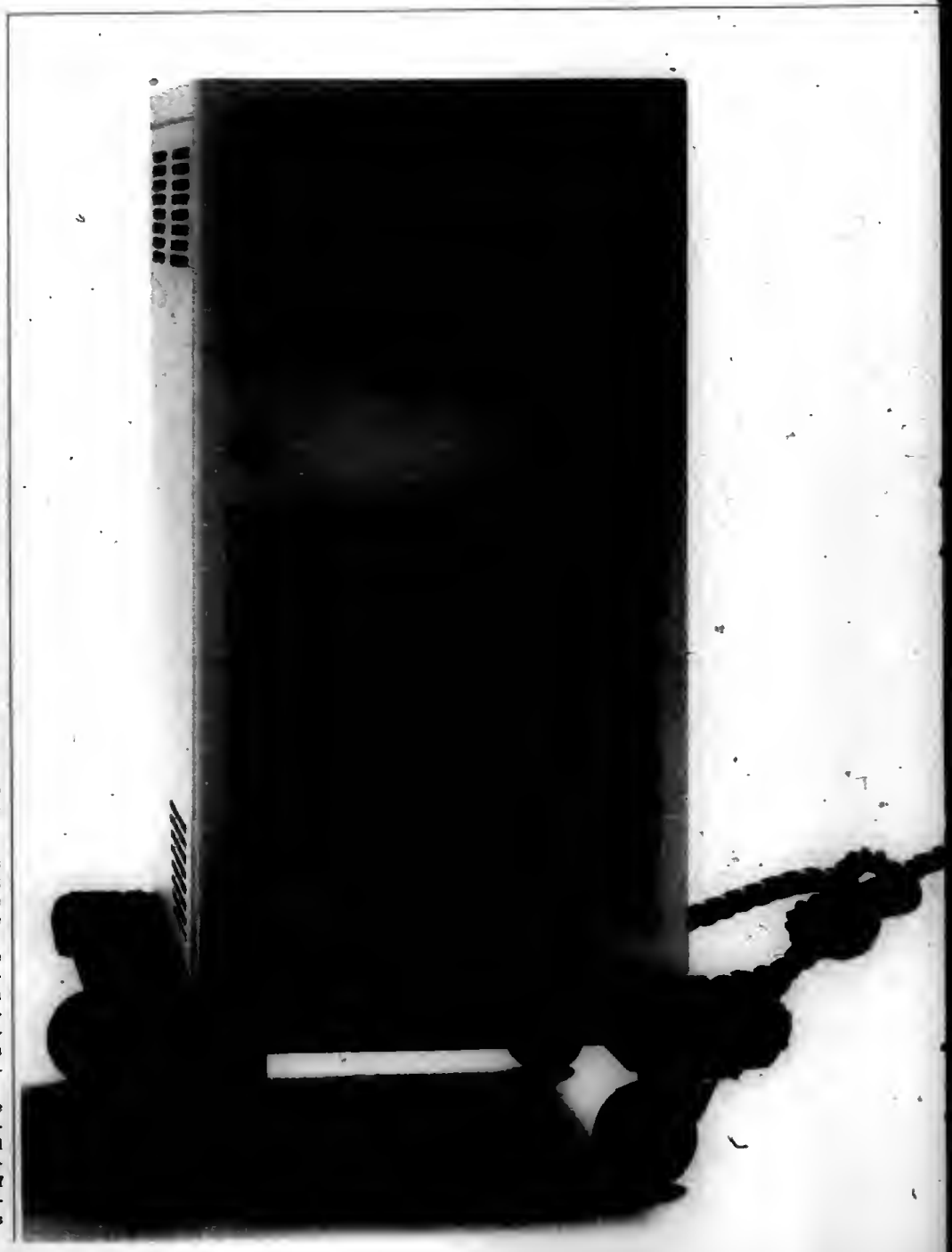
Traditional simulation techniques may find a satisfactory investment strategy, but there is no guarantee that a much better solution is not waiting to be found. The Russell-Yasuda optimization model seeks out the best possible course of action, the paper said.

Because the model is realistic and can cope with complexity, Yasuda's managers trust it enough to make core business decisions, Sasamoto added.

The Russell-Yasuda model can be adapted to a variety of financial institutions, as well as to manufacturing and other resource-allocation problems, according to Christine Noonan, director of marketing at Russell Business Engineering, a unit of Frank Russell Co. that is marketing the system.

Place of honor

The Russell/Yasuda financial planning model won the $3,000 second prize in the 1993 Edelman awards competition, which concluded last month in Chicago. The award, sponsored by The Institute of Management Sciences (in Providence, R.I., is named in honor of Franz Edelman at RCA Corp., one of the earliest industrial advocates of the management sciences. The 1993 first prize went to AT&T for a simulation tool that helps customers analyze their toll-free number call center operations.



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CPU

NCR Corp. has introduced the NCR System 3333, a multifunctional, industry-standard PC that offers the capabilities of a server.

The product can be used as a stand-alone PC, a client workstation or a small departmental or branch office server, according to the company.

Based on Intel Corp.'s 1486 microprocessor system, the NCR 3333 offers three graphics adapter options: a workstation graphics adapter, a Windows graphics adapter and a Super VGA graphics adapter. A typical configuration costs approximately $1,356 and consists of a 486SX 25-MHz microprocessor, a 120M-byte hard drive, 4M bytes of random-access memory, a 3½-in. flex drive, MS-DOS 5.0 and Windows 3.1 preloaded, a workstation keyboard and a mouse.

▶*NCR*
1700 S. Patterson Blvd.
Dayton, Ohio 45479
(513) 445-2078

Tatung Science & Technology, Inc. has started shipping the micro COMPstation LC, a workstation similar in design to Sun Microsystems, Inc.'s SPARCclassic.

According to Tatung, the product is being bundled with SunSoft, Inc.'s Solaris 1.1 distributed computing environment, enabling users to access more than 3,500 compatible software applications.

Entry-level models of the micro COMPstation LC feature 16M bytes of random-access memory expandable to 128M bytes and a 207M-byte hard drive expandable up to 2G bytes.

Prices start at $3,690.

▶*Tatung Science & Technology*
1840 McCarthy Blvd.
Milpitas, Calif. 95035
(408) 383-0988

Workgroup software applications

Minx Software, Inc. has announced its new line of "Integration by Design" products.

According to the company, DataBench is a graphical query-and-analysis package that offers a point-and-click interface for easy manipulation of data. The product provides access to presentation-ready data.

With PlanningBench, users can create, adjust and analyze planning scenarios in minutes, without shutting down their system for a weekly manufacturing resource planning run.

A single-user license of DataBench starts at $3,500. Pricing begins at $7,200 for a single-user license of PlanningBench.

▶*Minx Software*
Suite 224
1762 Technology Drive
San Jose, Calif. 95110
(408) 453-6469

Unix

Workstation Solutions, Inc. has introduced Quick Restore (QR), a backup-and-restore solution for enterprisewide Unix networks.

The QR engine features the company's LibMan library management module and a graphical user interface. QR controls both local and remote backups and restorations from any point in a heterogeneous network.

The product employs an advanced tape drive technology called "direct-to-block positioning" that eliminates the process of reading data sequentially by allowing the product to quickly find a file or directory for restoration anywhere on a backup tape, the company said.

Base price for the QR engine is $2,950.

▶*Workstation Solutions*
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Joanie M. Wexler

Wireless etiquette

Start saving up now for therapy sessions to deal with the guilt.

I'm talking about the nagging tugs on your priorities that are bound to intensify when those slick-looking gizmos known as wireless personal communicators become a way of life.

Your guilt complex will probably kick in around the same time your frustration level blasts through the roof as you fork over still more control of your time to people now able to contact you wherever (think about it — *wherever*) you are. And if you are conscientious, you'll likely also start agonizing over whether you're really doing your job if you shut your gadget off.

Anytime, anyplace

The dilemma of when to put the workday behind you — already an issue for many — is soon destined to hit the wireless-empowered masses. New corporate cultures will be structured around the assumption that employees *really* can be reached if they *really, really* have to be because technology makes it possible.

Wexler, *page 53*

Branch offices enter LAN fold

By Elisabeth Horwitt
SUNNYVALE, CALIF.

■ Two forthcoming products from Novell, Inc. may finally put local-area network internetworking within reach of corporate branch offices with limited equipment and technical support budgets.

The two turnkey packages will provide users with everything they need to interconnect LAN clients over an IBM Systems Network Architecture (SNA) or multiprotocol router backbone. Each package is priced at 47% less than it would cost to buy the components individually, Novell said.

NetWare SNA Branch Office and NetWare Internetworking Branch Office also minimize the need to employ technical personnel at each branch site by enabling data centers to remotely configure and manage the packages' components from a central NetWare server, a Novell spokesman said. Users can set up a configuration on the headquarters server, then distribute that "cookie-cutter" configuration to all branch offices.

Fewer user worries

This is welcome news for one user at a large manufacturing firm. "Our operation runs fairly lean, so we have probably a 20-to-1 or 50-to-1 ratio of branches to people supporting them," he said.

"We've been hitting Novell with the fact that they've got to bundle these things together, into a LAN in a can, for integration- and support purposes," the user said. By offering users a preintegrated turnkey networking package, Novell saves users from worrying about whether they have the correct software version or whether it is fully integrated with other pieces, he added.

"Novell is aiming at branch offices at the low, low end, where the action is now" in terms of LAN and internetwork deployment, said Janet Hyland, director of network strategy research at Forrester Research, Inc., a Cambridge, Mass., consulting firm.

"Cutting the price was a terrific idea; the $64,000 question is whether Fortune 500 companies will want to put everything, hubs included, in one server," she said.

Forrester's clients have indicated that they want to put their hubs and routers on boxes separate from NetWare servers, Hyland said.

Integration and support

A number of internetworking and SNA controller companies have agreed to support Branch Office packages on their boxes and provide integration and support services. This gives Novell a new, potentially fertile channel that can provide more effective SNA and internetworking support products than most value-added resellers, according to Rick Villars, a director at International Data Corp., a Framingham, Mass., research firm.

Both of Novell's Branch Office packages include NetWare, NetWare Global Message Handling System 2.0, NetWare Hub and a NetWare Management Agent.

Internetworking Branch Office also includes NetWare MultiProtocol Router Plus 2.1. SNA Branch Office includes NetWare for SAA 1.3 and NetWare SNA Links 1.0.

The 20-user NetWare v3.11 version of SNA Branch Office is scheduled to ship at the end of this month. The 20-user NetWare v3.11 version of Internetworking Branch Office is scheduled to ship this fall.

Third-party contributions

Novell's Branch Office is very much a third-party vehicle, depending on other vendors to provide users with a broad choice of connectivity applications and underlying hardware.

Among the slew of vendors that announced support for the packages last week were several SNA controller vendors that plan to run the SNA Branch Office on their own hardware.

Bus-Tech, Inc., for example, is working on two SNA controllers that will support SNA Branch Office. A data center version will provide a host channel connection for the central NetWare server; a remote version will support SNA connections at the branch office, a Bus-Tech spokesman said. In keeping with Novell's strategy of minimizing support and maintenance at remote sites, the platforms will be "ruggedized" and will support Novell's software for remotely managing and configuring its branch office platforms. The products are scheduled to ship by year's end, with the branch office version to be priced at $10,000 to $15,000.

In addition, Bus-Tech and its parent company, Network Systems Corp., will provide crucial service and support for the SNA Branch Office package, the Bus-Tech spokesman said. Indeed, Branch Office opens up a whole new channel for Novell, consisting of major SNA companies such as Bus-Tech and Memorex Telex, which can provide the SNA expertise and "direct interaction with IS departments" that most Novell VARs lack, said Rick Villars, a director at International Data Corp.

—*Elisabeth Horwitt*

NASA makes the Internet user-friendly

By Gary H. Anthes
WASHINGTON, D.C.

At NASA, you don't have to be a rocket scientist to use the Internet.

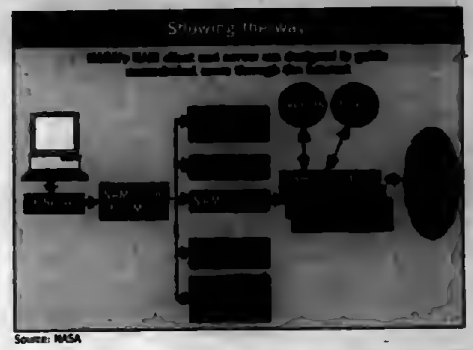
Internet resources have grown so rich that the network of networks has become an indispensable tool for some. But unless you are a seasoned user and a bit of a networking wizard, traveling the internet can be like flying to the moon without navigation gear.

Now, the National Aeronautics and Space Administration has put together a package of software that will give its 25,000 scientists and engineers something of an automatic pilot. A prototype has been greeted enthusiastically, and the public-domain software is attracting attention from other federal agencies and the private sector.

NAM, which stands for NASA Access Mechanism, is a collection of C language software tools that provide a graphical user interface (GUI) to remote and heterogeneous information. NAM's icons and menus allow users to access bulletin boards, send electronic mail, browse through libraries of scientific information, locate colleagues and a few other things, all without knowing much about where information is or how it flows over the global network.

NASA research analyst Denise Duncan said she found pockets of Internet use among the space agency's scientists and engineers when she embarked on a requirements analysis two years ago. For example, she said, a scientist at one site used the Internet extensively for interacting with colleagues and obtaining software.

At another site, a scientist in the same discipline did not use the Internet at all. "He said, 'Yes, I've heard about it. It's really wonderful.' He wanted to use it but he had no idea how; he was at ground zero," Duncan said.



Source: NASA

NAM is still in the prototype stage, but it will ascend to production status later this year after NASA digests and acts on

NASA, *page 53*

Briefs

Wireless gains spectrum

The Federal Communications Commission late last month reserved 3 MHz of spectrum — 11 channels — in the 900-MHz band for wireless personal communications systems. The agency assigned one channel to Mobile Telecommunications Technologies Corp., a Jackson, Miss., company building a nationwide, two-way messaging network. As with all wireless networks, how many companies receive spectrum and what they do with it will have great impact on the ultimate speeds available to users.

After-hours trading

AT&T and the New York Mercantile Exchange recently launched an electronic trading system that allows the exchange to conduct after-hours trades in energy futures and options. Designed to accommodate international trades during the exchange's normal business hours, the Nymex Access system reportedly mimics electronically the "open outcry" trading floor auction process.

Gigabit network experiments

Bellcore reported that its four-state, broadband networking trial, called Aurora, is now functional for researchers to explore business and scientific applications of gigabit networks. Aurora links laboratories in several Eastern locations using fiber services and equipment from Bell Atlantic Corp., MCI Communications Corp. and Nynex Corp.

Site Manager expanded

Wellfleet Communications, Inc. said recently that its router-specific network management application, Site Manager, will run on IBM RISC System/6000 workstations and Hewlett-Packard Co. HP 9000 workstations. Site Manager already runs on Intel Corp. 80386 and 1486 PCs running Windows and on Sun Microsystems, Inc. SPARCstations.

Ethernet eight-port switch

Cabletron Systems, Inc. recently committed to shipping a $7,495 eight-port Ethernet switching module for its smart wiring hubs at summer's end. The module is based on Artel Communications, Inc.'s stand-alone Galactica product. Cabletron has also announced an application that enables IBM's AIX NetView/6000 to manage Cabletron hubs. Cabletron and IBM also signed an agreement under which IBM's Systems and Operational Services organization will provide 24-hour-a-day network diagnosis and maintenance services for Cabletron networking hardware.

Racal goes for OpenView

Racal-Datacom, Inc. has agreed to integrate its Racal Management System into HP's OpenView. Racal's product is said to manage Racal local- and wide-area networking products as well as Simple Network Management Protocol-compatible network devices.

Certified network experts

Registration has begun for a new program devised to give organizations a yardstick for assessing and hiring network managers. The Certified Network Expert program, sponsored by HP, Network General Corp. and four other networking companies, tests Ethernet and Token Ring managers. The examination costs $395, and a pretest study guide with sample test costs $50. For more information, call the AG Group, Inc. at (510) 937-7900 or HP at (719) 531-4429.

Going public

Token Ring vendor Madge N.V. plans to go public next month. The company filed a registration statement for its initial public offering of more than 6 million shares of common stock priced between $10 and $12 a share.

"Workflow technology now provides a strategic platform for the critical business process of organizations all over the world."

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"We are teaming up with Computerworld and IMC this year for an upcoming White Paper on 'Workflow Technologies in the 1990s' to be published June 14, 1993. This paper presents a detailed examination of the imaging applications and buyer's requirements for workflow technologies as well as projected market growth forecasts for the coming years. This will be the first published paper to examine this market in both the U.S. and Europe."

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Sue Wolk
Executive Director
Association for Information and Image Management

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NASA

CONTINUED FROM PAGE 51

lessons learned from a just-completed beta test at a dozen sites. The intelligent gateway now provides the following:

- Source locator and query functions that locate and retrieve information from databases and libraries at NASA and elsewhere on subjects selected or typed in by users.
- Options for E-mail, faxing, printing, saving or sending by File Transfer Protocol information retrieved.
- A peer locator that offers several ways to find NASA employees, contractors or colleagues at universities and other federal agencies. The locator module uses X.500 directories, electronic telephone books, Knowbots — which can travel over the Internet looking for user lists — and the Internet's standard Whois and Finger protocol utilities.
- Bulletin boards that are available through Usenet tools — Archie, Gopher and the Wide Area Information Server — able to transparently search thousands of remote Internet hosts.

Platforms abound

The NAM GUI was built using the X Window System and the Open Software Foundation's Motif tool kit. It will run on DOS-based PCs, Unix workstations or Macintoshes. The NAM server currently runs on a Sun Microsystems, Inc. 4/470 server on a local-area network that attaches to the Internet through NASA's Science Internet.

Judy Hunter, special projects manager, said user response has been very positive. "A tool like this has never existed before," she said. "It was targeted to the end user — those who never had to use an information system before — and they are very excited."

And NAM has generated interest among nonusers as well, Hunter said. "I'm getting five or six calls a day, one-third of them from the private sector," she said.

Duncan said an idea for an enhancement has come from the artificial intelligence laboratory at NASA's Ames Research Center. The laboratory wants to add intelligence to the NAM GUI so that it remembers the preferences of users — for example, the types of information they typically seek and their preferred sources.

Information about NAM can be obtained by sending E-mail to NAM@STI.NASA.GOV.

Hubs merge digital, analog traffic

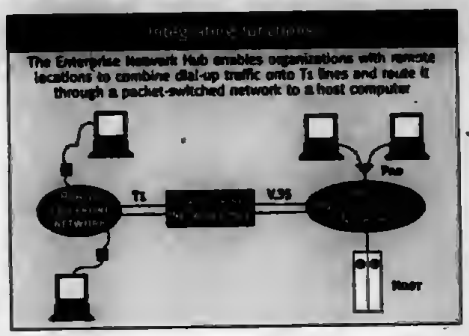
By Lynda Radosevich
SKOKIE, ILL.

U.S. Robotics, Inc. has moved to integrate analog and digital traffic into a single box with the introduction of two wide-area internetworking hubs.

Called the Enterprise Network Hub and the Transaction Processing Hub, the devices combine the functionality of modems, terminal servers and channel service unit/data service unit (CSU/DSU) devices into one chassis.

"It amounts to taking a stack of modems and turning it into a smart device with one line in and one line out," said Jay Batson, analyst at the network strategy service of Forrester Research, Inc., a consulting firm in Cambridge, Mass.

The main benefit of the hubs is their ability to centrally manage different functions — such as digital-to-analog translations and multiplexing — and to reduce the time it takes to verify modem connections.



The Enterprise Network Hub enables organizations with remote locations to combine dial-up traffic onto T1 lines and route it through a packet-switched network to a host computer

The Enterprise Network Hub is optimized for organizations with remote locations. For instance, if a company has 24 lines leading to remote offices, today they are often aggregated by the phone company into one T1 trunk that plugs into a private branch exchange at the customer site. The line is split into 24 phone lines, which plug into modems or CSU/DSUs. With the new hub, the connection goes from the phone company to the hub to the host.

The Transaction Processing Hub interfaces with the local carriers' exchange services, routing traffic through T1 trunks to local-area network interfaces for transaction processing applications. Circuit- and packet-switched buses minimize processing time, according to U.S. Robotics.

Don Letendre, manager of communications at Medpower, Inc. in Minneapolis, said that in tests, the Transaction Processing Hub saved his company eight seconds in establishing end-to-end modem connections.

Medpower provides electronic services, such as verifying the eligibility of employees using scanning cards, to health care organizations. The faster processing amounts to a $750,000 savings in hardware costs, Letendre explained, because the company can process more calls per modem.

However, U.S. Robotics is not the first to market with such a product. Primary Access Corp. is the main competition in this area, according to Batson. The San Diego company has a similar product, called Aperture, that has been shipping for several years. The latest rendition includes an X.25 packet assembler/disassembler, a feature U.S. Robotics said it plans to add to its products in September.

Additionally, the Primary Access system can support more than 130 ports unified under the network management system, said Andy May, vice president of marketing.

U.S. Robotics said its product is limited to 64 ports per chassis but that future configurations would probably provide more.

Currently, the hubs are managed under U.S. Robotics' Total Control management system. However, the company said it plans to ship hubs compatible with the Simple Network Management Protocol in September.

Wexler

CONTINUED FROM PAGE 51

So how does the worker know when it's "OK" to sever the electronic leash?

That employee will need corporate guidelines. But my impression from talking to users embarking on "virtual office" projects is that technology is being deployed anarchistically — a recipe for communications chaos and worker burnout.

Wireless has the potential to be a liberating, welcome tool. But while vendors are feverishly developing products and services to keep up with the "anywhere, anytime" ethic propagated by AT&T, RAM Mobile Data, Motorola and others, business managers aren't planning for wireless deployment so that it is more useful than it is a pain in the neck.

Learning from mistakes

We've already made this mistake with voice mail. We've done somewhat better with E-mail, thanks to visionaries such as Beyond, Inc., which led the industry in building "smart" message filters into applications. And wireless is the final communications frontier.

What do we do to control the barrage of electronic communications spiraling toward us? How about someone writing a generic corporate handbook on electronic etiquette, such as when going offline is sanctioned or when it's appropriate to multitask in another person's presence?

In fact, would you care to join me in this challenging endeavor? If you're hesitant, consider the following vignettes — unembellished experiences that could foreshadow the shape of things to come:

- A vendor from a wireless communications company scheduled a meeting with me in my office. The vendor carried an alphanumeric pager so his assistant could keep him updated on happenings at headquarters.

During what was supposed to be a half-hour meeting, he was contacted three times with office business important enough that he had to phone the assistant with instructions. The meeting stretched to more than an hour — good for him, I guess, as he was multitasking. Bad for my attempts at time management and my perception of how important I was in this person's day.

- A vendor from a wireless communications company scheduled a meeting with me in his office. The vendor carried an alphanumeric pager that linked to his company's PBX. Callers could push "1" to notify him that they were waiting for him to get to the phone.

The vendor received several notifications during our meeting. He was courteous to me and ignored them, but I was distracted by his abandoning real people on hold and could see he was growing more uncomfortable with each call he missed.

Bad for him — he annoyed the people who believed he was going to pick up the phone while they hung on. Bad for me — I felt I was in the way and couldn't concentrate on the meeting at hand.

If you're bullish on wireless, you might consider doing at least two things. First, press vendors for technical filtering and prioritization schemes on their gadgetry. This is a tall order, given that our jobs and businesses have become so dynamic that our priorities continually shift.

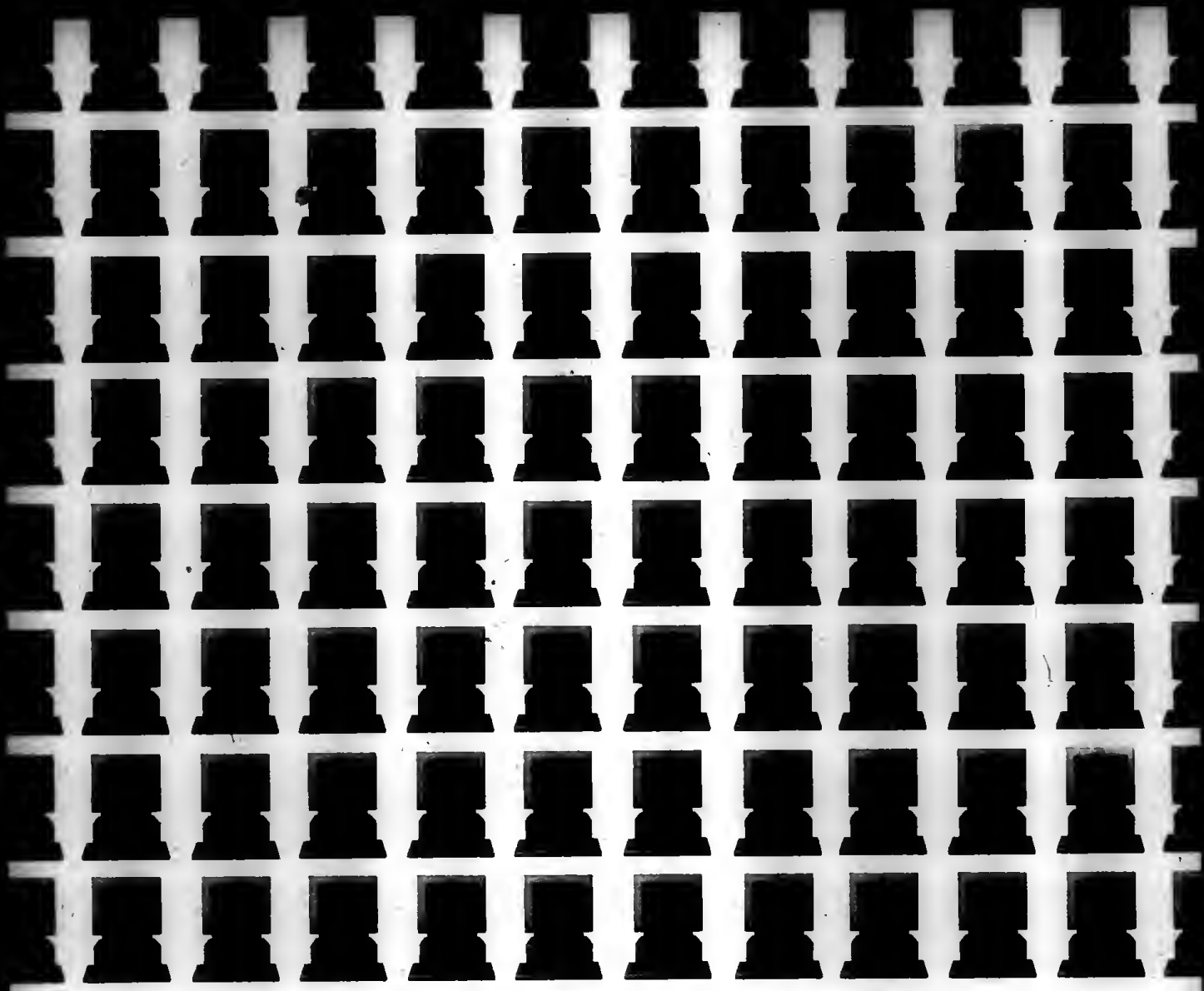
Too many gadgets?

Second, plan to stave off user burnout as employees' attention becomes further and further fragmented by the many modes of communication yanking them in more directions. This means sitting down and thinking through what you expect of mobile workers and making the ground rules apparent.

Better yet, cross-sections of companies could team (electronically, of course) to write some generic corporate rules of thumb. This is where my proposal comes in. If you would like to contribute to something along the lines of "The Corporate Guide to Electronic Etiquette," contact me at MCI Mail: 587-8027. Maybe we can kick some ideas around and break some ground.

Remember: It could be your sanity that's at stake.

Wexler is a *Computerworld* senior editor, networking.



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Transfers to Alpha slow

DEC customers look for others to make first move from VAX to Alpha

By Craig Stedman

Digital Equipment Corp.'s Alpha AXP systems have been shipping since last fall. Their performance benchmarks are impressive: DEC is on or even ahead of schedule in moving much of its OpenVMS layered software to Alpha, and by virtually all accounts, porting applications from the older VAX line to Alpha is a relative breeze.

But all that and a good haircut likely would not get a DEC salesperson an Alpha order from a production-oriented commercial OpenVMS user. For now, many users appear to have a philosophy regarding migrating to Alpha that can be boiled down to two simple words: "After you."

Many commercial accounts would have a hard time moving to Alpha before well into 1994 anyway because DEC does not plan to ship key layered products, such as the Application Control and Management System (ACMS) transaction processing software and full clustering support, until then.

Proof before the plunge

However, even staunch DEC customers interviewed recently said they want to see the proof in someone else's pudding before they even start to look seriously at moving their mission-critical applications from VAX to Alpha.

"We're really going to have to see that this is successful," said Dave Federman, vice president for systems and planning in the broker/dealer services department at Chemical Banking Corp. in New York. "We have to make sure we're plunging into a pool with water, not an empty pool."

"We don't sort of want to be the first one in," added George Kerns, assistant vice president of cellular information management operations at GTE Telecommunications Products and Services in Atlanta. He said he wants to be shown that the software product set GTE uses "is mature in that environment" before making any VAX-to-Alpha moves.

PacifiCare Health Systems, Inc., a Cypress, Calif., health maintenance organization, is also looking for some other major OpenVMS business users to take the Alpha plunge before it does. "We'd like to see some success stories out there," said Matt Holdrege, a senior network specialist at PacifiCare.

clear OK Alpha migration

Production environment

That kind of attitude does not surprise analysts. Using Alpha AXP workstations for development purposes at this point is one thing, "but as far as a production environment goes, I wouldn't touch that with a 10-foot pole," said David Santistevan, executive vice president of The Parsec Group, a Lakewood, Colo., training and software services company.

Mitch Hall, an OpenVMS marketing manager at DEC, agreed that the transition to Alpha "is kind of on the very leading edge" of what the company terms the initial production deployment stage.

Hall said he does not expect to see full commercial production use of the reduced instruction set computing technology start for another six to eight months.

Besides the wariness about going first, software is the major roadblock. A lack of third-party applications has forced DEC to point customers toward VAX systems upgradable to Alpha, although Hall said he expects that to change shortly. About 850 applications were supposed to be available for OpenVMS AXP by the end of June, according to DEC.

AXP sales

Alpha AXP sales are still not up to $100 million per quarter, according to William Demmer, vice president of DEC's Computer Systems Group. At that level, the RISC line still is not significant to DEC's overall sales, "except for the ways it's helping us sell more VAXs," Demmer said. The company expects Alpha to top the $100 million per quarter mark at some point during the fiscal year that starts this month.

On the layered side, DEC is now shipping a range of compilers and development tools plus its DEC Rdb and DEC DBMS databases. Oracle Corp. and Sybase, Inc. have released Alpha versions of their databases, and Cognos, Inc.'s PowerHouse fourth-generation language is out as well.

Most of the key development tools are available or will be "imminently," said Wes Melling, an analyst at Gartner Group, Inc. However, Rdb still needs "to settle down," he added, and products such as ACMS and full-blown VMSclusters are critical for commercial users.

Q2 '94

Some aspects of ACMS are not scheduled to be available on Alpha until the second half of 1994, according to an updated software schedule DEC released in June. The All-In-1 integrated office system and DEC's Reliable Transaction Router also will not be available until then.

Most users appear willing to wait and to buy new VAX systems while doing so. Randall Gannaway, director of information resources operations and technology at FMC Corp., a Chicago-based manufacturing and chemicals company, is looking at the feasibility of moving some of his financial and engineering applications to lower cost Unix systems.

However, FMC is also eyeing a six-processor VAX 7000 system as a replacement for an existing system, and Gannaway said he expects to go to Alpha once the necessary software is

Alpha, *page 59*

OpenVMS AXP software phases

Now shipping	July-December 1993	January-June 1994	July-December 1994
CASE development and runtime environment with clusters	**Full network environment**	**Full TP and production systems environment**	**Full TP and production systems environment**
OpenVMS AXP O/S V1.0, OpenVMS AXP O/S V1.5, SMP, New Batch/Print, Network Booting, limited VMS clusters	Posix (1003.1, .2), XPG3 base branding, RMS journaling, Volume shadowing	OpenVMS AXP O/S Epsilon, SEAVMS, VMS clusters (no restrictions)	
SAMPLE LAYERED PRODUCTS	SAMPLE LAYERED PRODUCTS	SAMPLE LAYERED PRODUCTS	SAMPLE LAYERED PRODUCTS
Pathworks Server, DECnet IV, X.25 Client, DEC Ada, DEC Cobol, DEC Fortran, DEC C, CDD/Repository, Macro-64, DECset, DECmigrate, ACAS, DECwindows Motif, SQL Services, DEC Rdb V5.0, DEC DBMS V5.0, DECforms V1.4 runtime, Desktop ACMS Client, Polycenter Scheduler	SNA 3270, TCP/IP Services, DEC C++, DEC Rally, CDD/Administrator, Data Distributor, DEC Rdb/Expert, DEC Rdb V5.1, DEC DBMS V5.1, Storage Library System	Token Ring, DCE, DEC X.500 Directory Services, Mailbus 400, DECnet/OSI, DECpresent, DECwrite, DEC/EDI, DECforté, DEC Rdb V6.0/6.1, DEC DBMS V6.0/6.1, DEC DB Integrator, ACMS/TDL, Desktop ACMS (Server)	All-In-1 IOS, DEC Basic, DECeln Real Time Tools, DBA Workcenter, ACMS/STDL (MA), DECforms V2.0, RTR Client/Server, Polycenter HSM

Source: Digital Equipment Corp.

Good migrations

A a rose by any other name would smell as sweet, so VMS is VMS — at least according to the resident poets at DEC. AECL Research Corp., an Ottawa-based atomic and nuclear energy research firm, said it feels no need to take away DEC's poetic license.

"It's true," said David Donahue, a senior systems analyst at AECL Research's computing and information systems operation. He said he found "no real problems whatsoever" in moving the company's OpenVMS scientific simulation programs to an Alpha AXP-based DEC 4000 Model 610 system.

"I loaded the applications, recompiled them, and they ran just fine, only a heck of a lot faster," Donahue said. The only difficulty came in initially booting up the Alpha machine, but that was due to a low-tech issue, he noted: No instruction manuals were available.

The DEC 4000, a loaner system, has been running for two months without problems, Donahue added. AECL Research is now in the process of buying a Model 610 to replace the loaner, and Donahue said he expects it to be shipped to the firm's computer center in Pinawa, Manitoba, this week.

The University of Miami's Rosenstiel School of Marine and Atmospheric Science is also "very pleased" with its early Alpha experience, according to Peter Evans, a senior research associate there. "It's been remarkably smooth, all things considered," he said.

After beta-testing the DEC 7000 AXP midrange system and an Alpha workstation, the Rosenstiel school bought 18 workstations in April and has "pretty much" moved more than 1 million lines of custom satellite data and image processing code onto those systems.

"We're talking less than 60 days. Probably, more on the order of less than 30," Evans said.

The university also wants to buy the DEC 7000 and move a cluster of VAX 3800s to Alpha, Evans said, but it needs to find funding first.

—*Craig Stedman*

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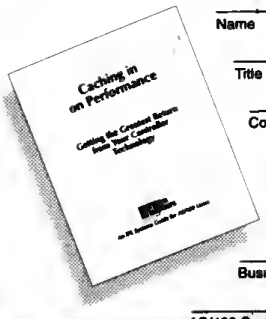

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Stat tool weeds out bid-rigging companies

Info Tech tools detect collusion among competitors

By Gary H. Anthes
GAINESVILLE, FLA.

For years, it was like taking candy from a baby. Now, computerized statistical techniques are putting a brake on the theft of milk and ice cream money from millions of schoolchildren.

The Information Technology Co., or Info Tech, has developed a suite of statistical and graphical tools for exposing price collusion among companies bidding on local and state contracts for dairy products and other items. After uncovering rigged milk bids in Florida that robbed schools of $33.5 million, Info Tech's approach is being applied across the country.

The company's "collusion detection system" originated in the late 1970s, when Info Tech helped Florida's attorney general develop automated tools for spotting suspicious patterns in highway construction bids. The results were so good, Info Tech built a mainframe-based package called Bid Analysis and Management System (BAMS), now licensed by the American Association of State Highway and Transportation Officials to 30 state departments of transportation.

When asked by Florida officials what else might be worth probing, Info Tech suggested school milk. According to Info Tech President James McClave, no suspicion of collusion on milk bids existed, but school dairy programs had all the earmarks of a market ripe for bid rigging: high dollar volume, commodity products, a small number of competitors and inelastic prices.

Info Tech used software from SAS Institute, Inc. to perform regression analyses, discriminant analyses and other statistical tests on the Florida milk data.

Put to the test

Twenty or so tests are applied to find "the fingerprints of collusion," McClave said. For example, Info Tech looks for the following:

- **Market share stability.** "Typically in bid-rigging cartels, there is a stability not seen in competitive markets, where you see dog-eat-dog and some companies going up while some go down," McClave said.
- **Clustered bids.** For example, a bid of 16 cents per half pint and another of 16.05 cents are suspiciously close.
- **Price-distance anomalies.** For example, prices not adjusted for the distance from a processing plant to a delivery point.
- **Trends in bid prices over a single annual bidding cycle.** Bids in a competitive market should fall slightly over time as bidders become more competitive. In rigged markets, they are likely to remain stable or rise, McClave said.

While these tests do not conclusively prove illegal pricing activity, they are so persuasive that they often enough do win out-of-court settlements. Info Tech gave Florida officials the results of its 18-month analysis of milk bids, and "within two weeks, they had witnesses talking," McClave said.

Now, sparked by the pioneering work done in Florida, Info Tech is helping law enforcement officials in 15 other states go after dairy companies suspected of bid-rigging and price-fixing. The federal government has picked up the cases and, according to a recent report in *The New York Times*, has obtained convictions or guilty pleas from 43 companies.

However, as much as computer analysis helps, it is not enough, McClave said. "You still need the analyst. You can't just turn the computer loose and say, 'Turn the red light on when you find something.'"

Building on principles in the mainframe-based, highway construction-oriented BAMS, Info Tech is now using SAS to develop a Collusion Detection System usable in a wider variety of bid situations.

Building fraud torn down

The North Carolina Department of Transportation recently used BAMS to spotlight a case of "front-end loading" on a large highway construction bid.

"The state figured that paying too much at the beginning of the contract would have cost some $97,000 in extra interest charges. State officials got the bidder to agree to stretch out payments.

Exactly how did BAMS do that?

"I won't get into particulars," said Jeff Darrer, head of the contract monitoring section. "That would be like putting the blueprint of your burglar alarm on your window."

Darrer said it is hard to estimate how much the software has saved the state, adding, "Since we've been using BAMS, the vendors know they are being scrutinized much more closely, and that helps hold costs in check."—*Gary H. Anthes*

Parallel systems

Sequent server clusters bust benchmark barriers

By Mark Halper
BEAVERTON, ORE

When it comes to running Oracle Corp.'s Oracle 7 Parallel Server database, it is Sequent Computer Systems, Inc.'s turn to claim it has built a better mousetrap — or at least a better cluster.

The multiuser computer supplier recently said it is making available clustered configurations of its Symmetry line of Unix platforms running Oracle 7 Parallel Server.

While Sequent is by no means the first to offer Parallel Server clusters — Tandem Computers, Inc., Digital Equipment Corp., NCR Corp. and Pyramid Technology Corp. already offer their own versions — Sequent is claiming record performances.

Sequent said its system scored a 1,002 tpsA rating under the Transaction Processing Performance Council's "A" benchmark test, using two Symmetry 2000/750 servers housing a total of 46 50-MHz 486 processors, 1.3G bytes of memory, 238G bytes of storage and eight Sequent clients. The configuration's cost per transaction score was $9,313.

They like it

Users were impressed.

"The fact that they broke the 1,000 tpsA barrier is a major announcement," said Michael Higgins, technical support manager/database administrator at San Francisco women's apparel maker Byer California.

As did other users implementing clusters, Higgins lauded the technology for providing backup: Users have constant access to a database if one box goes down because the other(s) will continue to run the same database.

"Our mission-critical applications are protected by being on two machines," he said.

Higgins praised Sequent for building a lock manager for Parallel Server, know as Dynix/ptx, into the kernel of Sequent's Unix operating system. Lock managers help ensure that two or more machines in a cluster keep consistent tabs on data, even as one machine is manipulating the data.

Prices for the Oracle software range from $12,500 to $37,500 per node, depending on options, and system prices range from $15,360 to $307,200 per node, depending on number of users and the hardware model. Storage capacity is 768G bytes through 384 shared disks.

Higgins said he plans to migrate his company's purchasing, inventory and production software from a single Sequent platform to a Sequent cluster at the end of this month. Those now run under Oracle Version 6.0. The company is also migrating Oracle 6.0 versions of Oracle general ledger and accounts payable programs running on a separate Sequent machine to the same cluster.

"What we've been fighting is how to get data back and forth between those two machines. Now we won't have to do that," he said.

Higgins said he expects the cutover will take up a weekend late this month.

Byer's Sequent systems tie into about 20 Macintosh computers, about 60 X Window system terminals and about 250 ASCII terminals, Higgins said.

Briefs

The IBM Consulting Group has added a service designed to help clients understand and manage the human and cultural aspects of business transformation. The Business Culture Analysis will provide clients with a set of techniques and diagnostics to assess an organization's cultural environment and its alignment with overall business operations strategy.

Jacksonville, Fla.-based Barnett Banks, Inc. information systems subsidiary Barnett Technologies, Inc. is about to sell the Tampa-based operations of its Financial Processors, Inc. correspondent bank data processing business. The buyer: Milwaukee-based Marshall & Ilsley Corp. The price: undisclosed. Barnett acquired Financial Processor as part of a 1988 acquisition; it will hang on to units based in Miami and Jacksonville.

Interex, the Sunnyvale, Calif.-based user group for owners of Hewlett-Packard Co. computer systems, has shipped the 1993 HP/UX Contributed Software Library, a compendium of 53 software programs, to users who pay a $495 annual membership fee.

NCR Corp. and Perot Systems Corp. have teamed up to develop the Pro-BanX Financial System, a Unix program designed to provide a single view of customer transactions and accounts across multiple applications and hardware platforms. The first installation was recently made at Southside State Bank in Tyler, Texas.

Manufacturing

System simulates future inventory options

By Elisabeth Horwitt
SATSORO, PA

With the cable television industry ballooning — and likely to explode as soon as interactive television gets off the ground — the last thing a major cable TV equipment vendor needs is to have its order-filling capacity held back by a stodgy manufacturing resource planning (MRP) system.

Jerrold Communications, a subsidiary of General Instrument Corp., has three traditional MRP systems that work fine for inventory tracking and for allocating factory and material resources among orders that have already been received and documented.

However, the company needed to start planning how to allocate materials and factory floor facilities well before it had firm orders in hand to anticipate bottlenecks and ultimately fill more orders, said Patrick Sim, director of operations. The system is expected to result in a 1% improvement in sales, or $4 million on revenue of $400 million.

"We needed something to pull together what goes on in manufacturing facilities so that we can do procurement planning for the supplier base we deal with, facility utilization planning and order management, such as how to deal with unexpected orders," Sim said.

The firm's answer: a client/server-based front end that enables users to query across the three MRP systems and simulate the effect of future orders, as well as perform resource planning enterprisewide. The product chosen was Advanced Planning System from Carp Systems International in Lexington, Mass.

With the product, "you can extract live databases from manufacturing applications, such as resources, routing, planned orders and materials, and then simulate scenarios with real data without affecting the [MRP] execution systems," Sim said.

Best of all, he added, such simulations can be run in minutes, while MRP systems can take 30 hours to put together a new planning scenario.

Testing without implementing

Traditional MRP packages lack the flexibility for plotting out future resource allocation based on incomplete or hypothetical orders. What users want is a way to test different scenarios without actually implementing them.

"We want to sit down and say something like, 'If we start production 15 weeks from now, what products do we need to buy?' " Sim said. "Or if I want to add 50,000 units to the production schedule over the next three weeks, do I have the factory floor capacity and/or materials?"

The only way to run such simulations under the current system was to download the data from the MRP application into a spreadsheet, "which was cumbersome and didn't let us get at the data in a meaningful way from a decision-making standpoint," Sim said.

In addition, Jerrold has three different MRP packages running on three different systems: The ASK Group, Inc.'s Man Man running on a Digital Equipment Corp. VAX; Panasophic Systems, Inc.'s software on an IBM System/38; and QAD, Inc.'s software on a Hewlett-Packard Co. HP 9000.

This made it difficult to do resource planning across the facilities and to track resources managed by the different systems.

Filling product gap

Two recently announced Carp products are addressing the gaps in Jerrold's MRP systems.

APS:Enterprise, which is now being installed on an HP 9000 running Unix, is a decision-support front end to the MRP software. The product can consolidate data from the different MRP systems for cross-facility planning. It also has the flexibility to run what-if scenarios on the effect a new order will have on production before that order — or the bill of materials and production plans needed to fill it — is cast in concrete, Sim said.

In addition, Jerrold is installing Carp's APS:Solo as a decision-support system for each plant. This means plants can download information about the overall production plan developed at headquarters and then run simulations to get a more exact fit between the production schedule and the plant's resources on a day-to-day basis.

The deal was signed four months ago. Jerrold recently completed the profile for data mapping its first MRP system — ASK's Man Man — so that users can now use APS:Enterprise to extract data for simulation purposes.

The company said it hopes to have the APS software up and running at all four factory sites and to interface with all three MRP systems within a year.

ON SITE

Jerrold Communications
Hatboro, Pa.

Technology: Arduini/server front ends to MRP systems using the Advanced Planning System from Carp Systems International.

Results: Improving inventory turns per year from 6.2 to 7.3 for an annual savings on inventory-carrying costs of $400,000. Negotiating volume prices through more consolidated purchases should result in a purchase price improvement of at least 1% on an annual basis on purchases of about $250 million per year of raw materials.

VAX users hesitate to switch to Alpha

FROM PAGE 55

there. "We have all kinds of alternatives, but we're locked into Digital for the near future for what we're running on Digital," he said.

GTE Telecommunications just added a six-CPU 7000 to its cluster, Kerns said. And PacifiCare is bringing in 7000s "almost one a week" as it replaces its entire cluster, Holdrege said; it also has purchased a mainframe-class VAX 10000 and may eventually get another one.

"When we do want to cut over to Alpha, it will just be a board swap," Holdrege noted. And there is little doubt that PacifiCare will eventually do so. "We're stuck," he said. "Come hell or high water, we're making a big commitment to DEC."

Porting made simple

Vendors that have ported their applications to the Alpha AXP platform do not seem to have been forced to raid the corporate soft drink and pizza vaults to fuel their efforts.

Sybase, Inc. had to rework "maybe 5%" of the code in moving the Open VMS version of its Sybase relational database management system over to Alpha, said Dwight Chen, a group product manager at the Emeryville, Calif., company.

While that is somewhat more than usual for a Sybase port, it was not viewed as particularly onerous, Chen said. "There were some pieces that had to be totally rewritten, but in general it took about as long as any other port for us."

Gary Henry, senior systems programmer at Acuscheol, Inc. in San Diego, said his company's Cobol compiler was ported in one day. Tom McIntyre, president of McIntyre Consulting, Inc., in Concord, Mass., rewrote moved his health care applications over in "about 45 minutes."

L. Stuart Vance, vice president of engineering at TGV, Inc. in Santa Cruz, Calif., said porting TGV's networking software to Alpha was comparable to making the leap to symmetric multiprocessing on the VAX several years ago.

Executive Software in Glendale, Calif., did find some steps "that were more difficult than we expected" in porting over its disk defragmentation software, said Vaughn McMillan, research director. The company had to rewrite about 10% of its code in C.

For the most part, though, the porting process has been relatively predictable, even for vendors "who had no right to have it easy" because of their use of privileged code, said Gartner Group, Inc. analyst Wes Melling. "It's boringly uneventful."

—Craig Stedman

Database management

Dun & Bradstreet Software Services, Inc. has announced HR Stream Flex Benefits, a client/server human resources application.

According to the company, HR Stream Flex Benefits runs under Windows and Sybase, Inc.'s SQL Server database on Unix-based systems from Hewlett-Packard Co. and Data General Corp.

Pricing begins at $88,000.

▶*Dun & Bradstreet Software Services*
3445 Peachtree Road NE
Atlanta, Ga. 30326
(404) 239-4636

Must Software International has announced Version 1.0 of Open Database/Server (ODB/Server).

The product provides client/server access to DB2 data for users on Windows, DOS and OS/2 workstations. For flexibility and interoperability on every level, the ODB/Server employs a layered, modular architecture, the company reported.

Through the ODB/Client application programming interface, this version will provide Microsoft Corp.'s Open Database Connectivity Core function call support.

Prices for the product range from $30,000 to $50,000.

▶*Must Software International*
101 Merritt 7
Norwalk, Conn. 06856
(203) 845-5000

Cross Access Corp. has introduced CrossAccess software. According to the company, CrossAccess provides high-performance technology for users who need to construct and maintain complex client/server applications.

Features include access to data stores via ANSI/ISO standard SQL, allowing applications to be built on any SQL-compliant language; the ability to access nonrelational and relational files on remote and local processing platforms; support for large, flat files up to 32K bytes; and use of C language in all CrossAccess software components to ensure application portability across different platforms, the company said.

Prices for a single configuration of CrossAccess software range from $90,000 to $150,000.

▶*Cross Access*
Tower Floor
1415 W. 22nd St.
Oak Brook, Ill. 60521
(708) 684-2345

The European IT Forum 1993

Information Technology in Europe – Communications at Every Level

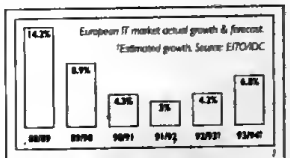
22-24 September, Hotel Excelsior, Venice, Italy

After growing at a rate of more than 15% a year in the 1980s, the European IT market expanded by just 3% in 1992. Despite this dramatic slow-down in growth, Europe is still potentially the largest IT market in the world and offers major opportunities for those prepared to accept the challenge.

For an in-depth analysis of the status and future of the IT industry in Europe, you are invited to attend the European IT Forum, 1993. Held in the prestigious Hotel Excelsior in Venice, Italy, the Forum is recognised as the most comprehensive and authoritative conference on IT in Europe.

As well as providing you with a unique opportunity to meet key industry personalities and influential opinion leaders, the European IT Forum will also enable you to exchange ideas on successful IT development and investment.

The registration fee for this important event is $1,450, or $1,300 for everyone who books before 30th June, 1993. For full details on the European IT Event of the Year, please complete and return the attached coupon. Since spaces are limited, early booking is advisable.



Conference Highlights

- What do European customers want from their IT suppliers? (User Panel)
- The European challenge – Keynote speaker: Carlo De Benedetti, Olivetti. Guest speakers: Bernard Pache, Groupe Bull; Hans Dieter Wiedig, Siemens Nixdorf Informationssysteme
- New IT, professional services and telecommunications supplier strategies
- Distribution: The channel revolution
- Desktop and LAN markets: A new era for growth
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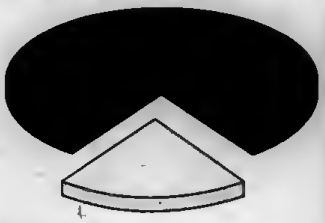

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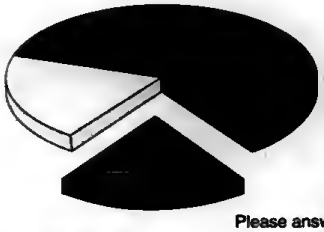

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Application Development

NEW PRODUCTS, 63
CENTERLINE TOOL HELPS UNIX DEVELOPERS, 63

Briefs

Plans for ObjectView

KnowledgeWare, Inc. recently outlined plans for upgrading ObjectView, an object-oriented development tool the company inherited when it acquired Mateasys Corp. early this year.

ObjectView 3.0, due out in the fall, is scheduled to include features for letting several developers work simultaneously on a project, such as version control and concurrent access to objects and code in the repository.

The product will also be linked more tightly to the design module under KnowledgeWare's Application Development Workbench computer-aided software engineering tool set, the company said.

USL licenses technology

Unix System Laboratories, Inc. (USL) has licensed remote-procedure call technology from start-up NobleNet, Inc. in Southboro, Mass., for the Unix System V Release 4 operating system.

The new software contains compilers capable of converting standard C language applications into code that can be distributed to remote servers over a Unix network. The NobleNet modules will be incorporated into Unix System V Release 4.2, USL said.

Bachman kits ship

Bachman Information Systems, Inc. began shipping two products as expected: Bachman/Generator for PowerBuilder and Bachman Distributed Development Kit [CW, May 10].

The Bachman Generator for PowerBuilder is a Windows-based tool that creates components for PowerBuilder applications using data models from Bachman/Analyst and database designs from Bachman/DBA to let users migrate existing applications to client/server or create new ones.

Bachman Distributed Development Kit provides three copies of the Generator and limited-use licenses for the Analyst and DBA design tools.

The Generator is priced at $995, and the Distributed Development Kit is priced at $9,500.

Inference tool debuts

Inference Corp. in El Segundo, Calif., has shipped early release versions of its Art Enterprise/Windows development product for client/server applications.

The 32-bit object-oriented tool is compatible with the Windows 3.1 operating environment and with Microsoft Corp.'s Win32s developer's kit. It will be generally available next month for $7,000 per developer. A Windows NT version will follow, the firm said.

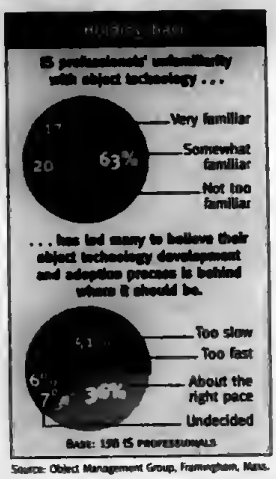
Early users ride object wave

By Melinda-Carol Ballou

The report cards are in from early users of object-oriented development techniques, and those pioneers said there are benefits to be reaped from object-oriented work. However, those users also described a series of pitfalls, which they said were generally outweighed by the faster development and greater flexibility of object-oriented applications.

The comments of two dozen attendees interviewed at the recent Object World conference in San Francisco jibe with results of a survey of 198 information systems professionals conducted by the Object Management Group (OMG) in Framingham, Mass., as well as with other recent surveys [CW, June 14].

In the OMG study, which will be available this week, about half of the professionals interviewed said they now use some sort of object-oriented technique, and the majority of the 198 interviewed said they want object technologies to advance more quickly (see chart), even though most said they are not yet familiar enough with object technology.



Source: Object Management Group, Framingham, Mass.

One of the key challenges facing early implementors is making the transition from procedural development using Cobol or C to object-oriented techniques, according to users at the conference. The shift from the use of dumb terminals to programming on Windows-based PCs also involved a steep learning curve for many.

Programmers "had to relearn everything they had ever learned and do it with browsers and debuggers on the PC," said Jim Dykas, senior technical services consultant at Cigna Systems in Hartford, Conn.

"The key thing about objects is to be able to view things abstractly," said David Filani, lead programmer at American Express Travel Related Services Co. In choosing members of the pilot project for object-oriented development, his organization chose those who were willing to learn something new and listen to team members.

Even with the difficulties in making the transition, Filani said, development using object-oriented techniques was three times faster than using conventional programming.

Design comes first

First and foremost, developers must examine the business problem the application will solve, according to early users at the conference. Nearly all users who had experimented with the technology said they spent a much greater percentage of their time on design than on the coding portion of the development process. This differs from conventional programming techniques where the actual coding made up more than half of the amount of time

Object wave, *page 62*

Court limits damages for breach of developer contracts

By Thomas Hoffman
NEW YORK

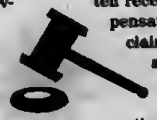
A state appellate court here ruled that because a software vendor did not willfully injure a customer's business by failing to complete a development contract, the vendor is responsible only for returning the contract fees it received. As such, the vendor will not have to pay the $5.4 million in additional damages assessed by a lower court, money that was not provided for under the original agreement.

The ruling applies to a 1984 contract under which Noble Lowndes International, Inc., a Roseland, N.J., software developer, agreed to build — but failed to complete — a suite of customized claims processing software for Metropolitan Life Insurance Co. Legal experts said the decision is significant because it could severely limit the amount of damages awarded to user companies for such uncompleted contracts.

"The bottom line is that this is a fairly authoritative decision that supports the proposition that people will be held to their written contracts," said Ron Abramson, an intellectual property counsel for the New York law firm of Hughes, Hubbard, & Reed.

The unanimous decision was reached by a four-justice panel in the New York Supreme Court's Appellate Division.

In 1991, a New York Supreme Court jury found Noble Lowndes guilty of breach of contract. However, the jury awarded Met Life $204,000 to cover the amount paid under the contract and an additional $5.4 million to cover expenses, damages and expected savings had the software performed as specified.



The jury decided that Noble Lowndes willfully breached the contract, thereby entitling Met Life to additional compensation. Noble Lowndes appealed the decision and asked the courts to limit the damages to those specified under the contract.

Although the June 17 decision technically can be applied only to certain cases in New York, the court is highly regarded by other states, and the decision will likely have a persuasive influence in other jurisdictions, according to attorneys familiar with the case.

Tort terms

Peter Brown, a partner at the New York law firm of Brown Raysman & Millstein who represented Noble Lowndes, praised the appellate court for distinguishing "willful" as a term of tort and not contract. Nearly all computer contracts, Brown said, express a limitation on damages for which a plaintiff can sue.

Meanwhile, torts, or unethical acts, allow plaintiffs to apply for — and often receive — more generous compensation on breach of contract claims, regardless of the written agreement.

Others agreed on the importance of the distinction. "You cannot use the examination of a tort to do an end run around a contract," said Daniel T. Brooks, a partner in the Washington, D.C., branch of Cadwalader, Wickersham & Taft.

"What the court really did was issue a decision that was highly protective of the computer industry," Brown said.

Anthony D'Amore, associate general counsel at Met Life, said the insurer plans to appeal the decision.

Object wave

CONTINUED FROM PAGE 61

spent on the project.

Determining those business processes and involving end users were key advantages to object-oriented vs. procedural languages.

"Involving end users is the Holy Grail ... and the object paradigm lets computer techno-weenies talk with end users in terms that they can understand," said Tom Hassler, IS director at the State University of New York's (SUNY) Institute of Technology in Utica, N.Y.

Objects on their mind

In comparing IS plans for object technology, a survey of 198 IS pros by the OMG found that 49% of leading-edge users, 29% of mainstream users and 25% of conservative companies were "probably" going to move to object technology; only 22%, 18% and 0%, respectively, of these types of users were "definitely" going to make the move, the survey found.

The use of object-oriented techniques allowed Hassler and others to work together with end users to determine the appropriate business model and then create the application that most appropriately met their needs.

This was easier to do because developers were able to discuss the actual business processes involved rather than having to fit those processes into a particular technological model, such as relational tables, Hassler said.

Another key issue that must be addressed is that of legacy data — being able to separate it from archaic applications and then access it as needed; object-oriented techniques also facilitated this process, users said.

"The real business problem was trying to determine how to get out from under legacy systems, and when we used structured development techniques, they produced the Manhattan phone book," said Tom Hadfield, a supervisor at the IS office of Chrysler Motors Corp. who is reorganizing the payroll system for the company. Using object-oriented techniques, his group was able to come up with a flexible and simplified model for the business, which was then used to design the object-oriented application.

With shrinking budgets and smaller IS staffs, Hassler was looking for "people extenders — intellectual prosthetic devices," which he said were provided by object-oriented techniques, in setting up a new library system for SUNY. "We had no clue about how long it would take, but after we did the analysis and design, we were able to set up a prototype in a single afternoon and then share it with end users."

Hassler's organization was able to work with other universities that had previously been using object-oriented techniques. Other users emphasized the importance of "mentoring" — bringing in experts who can help developers make the paradigm shift from conventional to object-oriented techniques.

Industry consolidation behind standard services and interoperability for objects across platforms and network protocols, combined with the availability of tool kits and class libraries, should make the transition to object-oriented design easier, according to other users.

"As we try to provide interoperability between new and legacy systems, we view standards, such as the OMG's Common Object Request Broker Architecture, as an underlying technology to provide that," said Jeffrey Fleisher, senior scientist at the National Photographic Interpretation Center of the National Exploitation Laboratory, a nonprofit federal research institution.

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CenterLine adds Unix testing tool

By Melinda-Carol Ballou
CAMBRIDGE, MASS

CenterLine Software, Inc. this summer will ship TestCenter, a software testing tool that helps Unix C and C++ developers locate and correct program errors and manage test coverage information.

"Today there's a disconnect between the quality assurance [QA] folks designing the test suites [at the end of the application life cycle] and programmers who test the code as they go along," said Sesha Pratap, chief executive officer and co-founder of CenterLine. Pratap said programmers always share code but rarely share the test suites. "They usually throw them away since they think of it as a QA job and don't want to take the 10 minutes to document the tests."

TestCenter is the first in a series of testing products planned by CenterLine. It features automatic runtime error checking and memory leak detection on executables to enhance memory use and code quality, company officials said. Graphical test coverage lets programmers more easily determine which parts of the code have not yet been tested, and an intuitive graphical user interface and querying capability facilitate access to test result files, they added.

No recompilation is required to use the product, officials said, which makes for faster turnaround times.

TestCenter can be used in conjunction with any Unix tool set, including SunSoft, Inc.'s SPARCWorks or CenterLine's own CodeCenter or ObjectCenter programming environments, Pratap said.

TestCenter, available on Sun Microsystems, Inc.'s Scalable Processor Architecture workstations, will be priced at $995 for a user license and $1,995 for a floating license until Sept. 20. After that, pricing will be $1,295 for a user license and $2,995 for a floating license, respectively.

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Languages

Acucobol, Inc. has released Acucobol-85 for Windows, a specialized version of the Acucobol-85 runtime system that runs Cobol programs as native Windows programs.

With Acucobol-85 for Windows, users can program icons, customize titles, modify application screen size and select window placement.

The product enables a Cobol application running as a native Windows program to offer Windows features such as network compatibility, multitasking support, automatic mouse support and Windows print spooler support.

Extensive color mapping facilities are provided.

A runtime version of Acucobol for Windows costs $240. A development system costs $1,200.

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Code libraries

Berard Software Engineering, Inc. has announced the Berard Object & Class Specifier (BOCS).

According to the company, BOCS is an object-oriented development tool that helps users in documenting and modeling a system and its underlying objects.

BOCS comprises a series of components, including a set of libraries to manage requirements, object and class specifications and graphical models; an object and class specification editor to specify objects; a set of graphical editors that can be used within the context of an object and class specification; and a traceability tool.

BOCS will be available during the third quarter for $595 per copy. An introductory offer of $395 will end July 30.

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Custom

Smuggling is big business. But now, U.S. customs officials can call on imaging to help nab the crooks.

KATHERINE LAMBERT

U.S. Customs' Stu Mentzel: *'We wrote our own imaging application'*

By Amy Bermar

Just a few months ago, a young man heading to Chicago was caught smuggling heroin when he changed planes at Boston's Logan International Airport.

The suspect agreed to cooperate with officials and continue with the delivery. But first, customs inspectors took his picture with a video camcorder linked to a 386 PC. They also photographed the two local agents who would tail the courier on the remainder of his journey.

It took 30 seconds to upload the information to the U.S. Customs Service's central mainframe in northern Virginia and another 30 seconds to send each image to Chicago, where colleagues at O'Hare International Airport would be waiting.

"Two hours before we got there, they knew who we were and what we would be wearing," says Bob Malonson, a customs inspector at Logan. "There was no need to flash our badges and risk scaring the guy who was supposed to pick up the stuff and have him run away."

The suspect arrived at O'Hare, followed by the undercover customs agents. The drop occurred in minutes, and the man who picked up the bag was taken into custody.

Each week, more than 2 million people try to enter this land of opportunity. Many are citizens. Most of the rest are equally legal. But several hundred are smuggling heroin, gems, guns and counterfeit merchandise ranging from pirated software to fake Louis Vuitton luggage.

Thanks to a new imaging system installed at the Customs Service, the job of deciding who should head for the hoosegow has been made easier.

Anyone who has traveled overseas has had his passport

Custom Image, *page 66*

Bermar is a free-lance writer based in Newton, Mass.

inside

Custom image

CONTINUED FROM PAGE 65

stamped. But peering at passports reveals only the basics. Now, at a growing number of airports, seaports and land crossings, customs' first enterprisewide imaging system provides the kind of information that helps agents make double-quick decisions.

What's new? Digitized photos of the criminals, terrorists and human "mules" who carry illegal drugs from Asia, Africa and Latin America. Customs' worldwide Imagery System also holds a record of images of the many ingenious ways in which smugglers attempt to hide their booty.

"If someone arrives at an airport and is bringing in drugs, they may be part of an organized smuggling operation," says Scot Tydeman, the national program officer at U.S. Customs' Office of Inspection and Control, which initiated this project in 1988. "If they're a runner, they may not know the name of the person they're expected to meet at the airport. But they'll know the image."

At most airports, uniformed customs inspectors operate from a discreet and darkened operations center; its mirrored walls deflect attention. Typically, the center is in the middle of the international arrivals luggage carousels. The Imagery System is also located in this booth. From there, inspectors can unobtrusively take travelers' pictures. Anyone arrested by customs also has his picture taken. The camera is brought to the examination room.

Most research on passengers is done before the flights arrive. Once the luggage starts coming through, trained dogs sniff for heroin. In the hectic moments that lead up to a search and seizure, few officials can remember to record every step on film.

"Everybody gets excited," Malonson says. "Nobody says, 'Hey, wait a minute, where's the camera?' "

So stored images help inspectors understand new smuggling techniques, including how a brown Kahlúa-like liquor bottle can be specially molded to create a hidden cavity in the center of the bottle for heroin. Or how a 5-pound can of lard was recently used to carry heroin. Or how a steel cylinder had been hollowed out to hold heroin. In that case, experience carried the day: The cargo inspector noticed the two axles turned in different directions. Imagery preserved the information for other inspectors around the country.

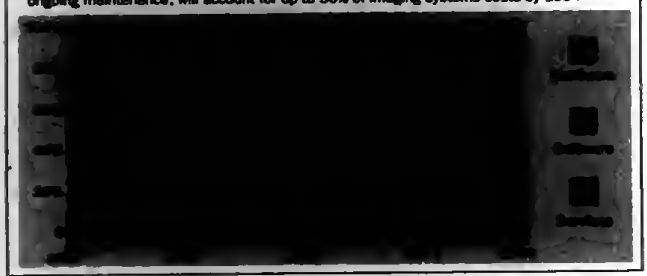
The system also helps document how passengers carry drugs on their bodies and who has been apprehended.

For example, when a woman with a beehive hairdo came into New York, dogs discovered she was carrying heroin inside her coiffure. Her image was entered into the system. Six months later, when she was listed as a passenger on a flight coming into Boston, the local inspectors knew just what to look for. And when she walked off the plane with the same piled-high hairdo, she was caught again.

How imaging helps customs catch crooks

Spotlight on service

Services, including business process redesign, application development and ongoing maintenance, will account for up to 50% of imaging systems costs by 1994



Source: Delphi Consulting Group, Boston

Negative image

But when the idea of the imaging system first came up five years ago, it got a flat "thumbs-down" from information systems.

"As data processing people are wont to do, we said, 'You don't want that — it's way out there,' " recalls Rod MacDonald, director at the U.S. Customs' Office of Enforcement Systems, which manages application development for customs' enforcement activities.

"What we meant was, 'We don't know a lot about it,' " he says.

But, he says, the users persisted. Having ready access to pictures would help inspectors, analysts and agents collaborate more effectively on nationwide investigations. A picture could eliminate confusion when two people share the same name and date of birth, especially if one is wanted by the police. The fact that customs supports virtually every other federal agency simply strengthened the argument for taking a risk.

And it was a risk: In 1988, customs did almost no work with PCs and minimal research and development. This project would involve both — as well as input from five different departments. MacDonald appointed a two-year agency veteran named Stu Mentzel as technical liaison and told him to learn all he could about commercial imaging.

No imaging Goliaths

At the annual imaging show sponsored by the Association for Information and Image Management, Mentzel drew his first uncomfortable conclusion: There were no big players.

"The big vendors, like IBM, went after document management, where they could get a return on their money quickly," Mentzel says. "But photo imaging tended to be dominated by smaller companies, which were PC- or LAN-based."

In addition, standards were just being established. The hardware standard at the time, 286-based PCs, also meant that both software compression and video capture would require separate, additional boards.

Two small companies were selected to provide imaging software and compression boards. Both proved to be strikeouts: The hardware vendor could not meet the delivery dates, and the software vendor was reluctant to rewrite its code without a long-term sales agreement. So customs decided to do the job itself.

"We wrote our own imaging application," says Mentzel, who changed hardware vendors at the same time. "The software we created is now totally the property of the U.S. government, so we can distribute it as we like."

There are currently 95 systems in place, and Imagery officials say their colleagues are eager for more systems. Another 42 are slated for installation this year, covering the 50 busiest U.S. airports and crossing points along the Mexican and Canadian borders. If $16 million in funding is approved, the 920 systems could be rolled out as early as this fall.

Downloading the Imagery software from the IBM host means that this new mission-critical application can be distributed to the field for approximately $30 per user. The gear for recording images would be centralized at each site.

"We want to treat imaging as a standard capability," MacDonald says. "It will be there, just like word processing, spreadsheets and access to the mainframe."

Today, some 40,000 images are in-

Custom image, *page 68*

On-line offshoots

Customs hopes in the long run to integrate a wide variety of federal agencies and images into the system.

Here's what could eventually be on-line:

- Customs: Images of people, merchandise, reports and related validation [illegible]
- State Department: Passports and visa applications that have been denied.
- [illegible] and Naturalization [illegible]. People who have been denied citizenship.
- [illegible] by the year 2000.
- [illegible] and Firearms: [illegible]
- [illegible] of Agriculture.
- Interpol: European Secret Service [illegible]
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Custom image

CONTINUED FROM PAGE 66

stalled on the system, which the pilot team delivered in four months and rolled out in 1990.

The inspectors currently using the systems are responsible for adding new images. Generally speaking, each site has one or two self-appointed gurus who handle most of the imaging work, which can have a long reach: The agents, who are comparable to detectives, sometimes ask for an image to be printed and faxed to them on the road.

Expansion plans

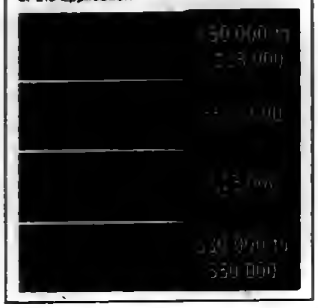
The agency plans to expand Imagery's reach to exchange information with nine other federal agencies participating in the Interagency Border Inspection System, known as IBIS, each of which has thousands of images and its own unique definition of the data format that should be considered the government's standard (see story page 66).

But coming together will not be simple. While customs' system is full color, for instance, the FBI's is gray scale, with the higher resolution required for fingerprint scanning.

Customs officials say they expect each agency to keep its own records on its own mainframe, and a committee of representatives from each agency is already considering developing conversion software. Still, some people in customs indicate that the sheer volume of customs' records may persuade others to adapt the Imagery format.

Cost factors

Implementing an imaging system will cost you, but how much depends on the intent of the application



Imagery is fully integrated with customs' core relational database, known as the Treasury Enforcement Communications System, or TECS, which is written in Cobol running under CICS. The compressed image data is stored on Computer Associates International, Inc.'s DatacomDB, a hierarchical database. Customs' 12,000 users routinely access TECS, which contains more than 5 million records.

Making sure Imagery would support this information was the No. 1 priority. Many vendors experiment with new technology without planning for real-life use.

"We said at the outset that we want to use it in the field, where we have 10,000 end users," MacDonald says. "It had to play on the PC and on a 286."

Three years ago, each complete system cost about $16,000 and included a still-video camera, an IBM Enhanced Graphic Adapter monitor, a video camcorder and a color video printer, write-once read-many storage, a low-end and a high-end scanner and basic office automation software. The new 386 systems are slated to cost $5,000 per seat and will still use the internally developed 3270 emulation program that handles the data and image file transfer, says Jim Ryan, director of Office Systems Engineering and Operations, which is managing the rollout.

Costs could diminish further if the system is eventually ported to the client/server module using object-oriented programming techniques, particularly as new enhancements are added, Ryan says. In the near term, though, customs will continue to run the system on its mainframe and 150 Novell, Inc. NetWare networks in the field and evaluate Microsoft Corp.'s Windows NT as it matures.

A few glitches

But because the system was not designed to track drug concealment methods, inspectors trying to find old records sometimes run into snags. There is no cross-reference method for identifying coffee can seizures, for instance, or cassette tapes, both of which have been used to carry drugs. Creating this ad-hoc search capability is considered a high priority, after the software conversion.

In the meantime, the inspectors have created their own workarounds. For example, Malonson reviews the previous day's images at the beginning of his shift.

"Thirty seconds is pretty good response time for images," MacDonald says, adding that asking most users to wait more than a couple of times a day is still too long. "I'd like to improve it so it is the same as every other record in the system — three to five seconds."

An early wish

There's only one improvement MacDonald says he wishes he had made early on: encouraging greater communication between the customs R&D team that developed the application and the group that eventually installed it.

The lack of teamwork slowed down Imagery's implementation, often unnecessarily, he says.

But MacDonald is optimistic about the prospects for eventual interagency cooperation. In fact, he says, IBIS is already prompting agencies to work together, some for the first time.

"It's been a tremendous driver of interagency cooperation," he says, "simply because all of us realized the benefits of sharing data and we have so many common interests. We need to work together to give our employees the information they need." ■

Transition time for telecom giants

By Neil Margolis

Squeezed by competition and caught in a technological paradigm shift, telecommunications giants are racing to acquire information systems expertise as a hedge against winding up as exhibits in the corporate equivalent of *Jurassic Park*, analysts said last week.

"The pressure is on for companies to re-engineer, and fast," said Alan A. Burgess, worldwide managing partner at Andersen Consulting's telecommunications industry group. To help them do it, he added, firms "want people with experience at making technology work in an exceptionally competitive environment."

At multibillion-dollar Bell Atlantic Corp., for instance, "a sense of urgency, commitment and desire to leave our bureaucratic, monolithic ways behind" is driving a massive re-engineering initiative collectively known as Systems 2000, said Mark Weglettner, IS group assistant vice president of systems architecture and standards.

For telecommunications vendors, IS spending is often too big a purse to entrust to inexperienced CIOs

AT&T	$[illegible]00M
GTE Corp.	[illegible]
Bell Atlantic Corp.	$75[illegible]
Ameritech Corp.	$56[illegible]
MCI Communications Corp.	$46[illegible]

Source: Computerworld Premier 100

The 2-year-old project already has Bell Atlantic in the throes of a move from mainframe-based customer contact support to a Unix-based client/server sales and service negotiation system, which will support some 50 to 100 Bell Atlantic representatives. In addition, an initial release of the Bell Atlantic Automated Record System — a computer-aided design-based engineering and construction support system — has been up and running for the past several months.

That's why longtime Texas Instruments, Inc. IS Vice President and Chief Information Officer Ralph Szygenda is packing up to move into the CIO slot at Bell Atlantic next Monday. During his years at TI, the 44-year-old Szygenda racked up a record in adept IS/business alignment, wrapping IS into five distinct businesses and lowering costs along the way. He also consolidated 36 data centers into one, spearheaded the implementation of a single-image, peer-to-peer network and oversaw a manufacturing operation's move into object-oriented, multimedia workstation-based client/server computing.

TI's Ralph Szygenda's *record as a fast-moving, business-savvy manager helped him become CIO at Bell Atlantic*

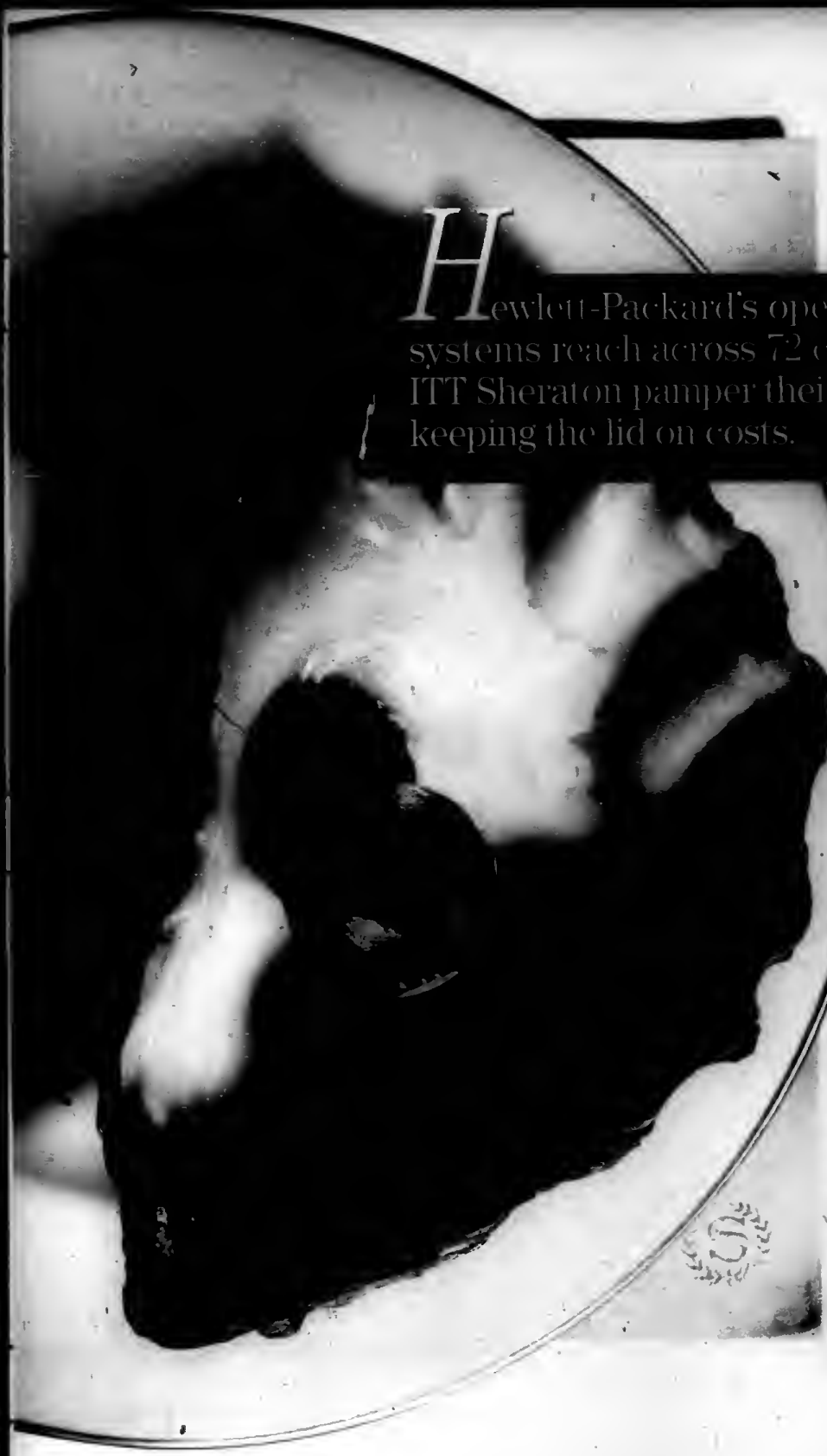
Similarly, AT&T is in the midst of molding its maiden CIO's job around Ron Ponder, who rose to prominence as the IS director who helped fuel Federal Express Corp. to a Malcolm Baldrige National Quality Award. He has also spent the past 18 months leading a massive IS consolidation aimed at drastically cutting costs for Sprint Corp.

Mandate to change

"The telecom industry is in a state of flux," said John Rasmus, director of voice communications at San Jose, Calif.-based market research firm Dataquest, Inc. Technologically and commercially, he noted, "All at once, companies have to deal with the acceleration of the melding of telephony and computers, integrate video and multimedia, downsize and go global."

That's an especially tall order for firms whose technology and pricing structures, unlike those of many of their whippy new competitors, grew and overgrew during an era of big iron and regulated monopoly, Burgess noted. "Competitive access providers have cost structures about one-tenth [those] of the Bell companies," he estimated.

Can telecommunications firms avoid the dinosaur trap without drafting battle-tested CIOs? Few are likely to try to find out, analysts agreed. "It's possible for anyone to learn anything and do it correctly," said Weglettner, "but it's easier to tap experience." ■



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Thomas J. Buckholtz

Productive step forward

During the past several years, there have been a number of negative claims under the heading of "Productivity gains: Are the benefits from information technology real?" A popular conclusion seems to be that productivity gains are small to nonexistent.

However, my experience indicates quite the contrary.

While leading the office automation program of a gas and electric utility in the mid-1980s, I observed specific increases in output with no increases in staff. For example, use of PCs by a few people allowed several dozen other people to be one-third more productive in reviewing homes for energy use and recommending how the households could improve lighting and heating, often while reducing energy consumption.

While staffing for this program remained constant, work output increased in quantity and quality, and, by eliminating the need for the traditional supporting computer services, the total cost decreased.

I also saw cases in which the same amount of work got done — with significant decreases in staff.

Several projects fell into this category. For example, use of handheld computers for recording meter readings eliminated dozens of in-office data-entry positions while keeping the field staff of meter readers constant.

More recently, while leading the deployment of information technology for the Executive Branch of the federal government, I observed the effects of automation at the Social Security Administration.

During the 1980s, Social Security simplified and automated data-intensive procedures. Determining that 40% of the information the public had been supplying on forms was data it already knew, Social Security removed most of that redundancy from its procedures.

It also improved its service by installing a computer system to facilitate responding to inquiries from its tens of millions of constituents; now, a clerk can answer questions about an account during a phone call. Concurrently, Social Security decreased its employee count by 20%, from 80,000 to 64,000.

> A more telling question is how today's work could be accomplished at all if it were not for information technology.

Measurement issues

So, although I have observed actual cases in productivity improvement due to technology, a problem remains: We have no way of defining or measuring what is being reported.

What are some of the issues?

One issue is that of "local" measurement vs. "global" measurement within an organization.

Suppose a corporation makes an improvement through automation that results in halving the staff devoted to a function, while continuing to handle the same work load with the same quality. Dividing output by input, there is a 100% gain in productivity per person — locally. But what about for the entire firm?

If the extra staff is laid off and no other functions are affected, there is a corporatewide gain in productivity per person — the same work is done with a smaller work force. If, on the other hand, the extra staff is redeployed just to the task of improving the quality, but not the throughput, of other corporate operations, then there is an argument for no overall productivity gain. The company handles the same number of units of work with the same number of people.

This example points out another issue in focusing on quantitative measures of productivity. How does one recognize, in the productivity numerator, qualitative improvements in outputs? Where is the place for timeliness or customer satisfaction?

The composition of a unit of output can also change. Is a car made today the same as one made 25 years ago? No. A new car has a special brake light, a sophisticated pollution control system and one or more air bags.

Today's unit of output can differ considerably from yesterday's. For processes that occur in offices, automation has facilitated accomplishing work. However, society continues to increase the requirements per transaction — more service or features to stay competitive; more complexity generated by new government programs; additional refinements in laws and regulations; new subtleties in interpretations of laws and regulations; and growing requirements for accountability and auditing.

Indeed, one could ask a question as to the extent that the flexibility for change provided by automation is providing opportunities for society to require such growth in complexity.

In the final analysis, there are clear-cut productivity gains. In the 1990s, Social Security handles more accounts, with more timely public service, than it did in 1980. It does so with a significantly reduced staff.

I suspect that a close look at many situations would lead to conclusions that gains have been achieved. Indeed, a more telling question than whether there have been gains is probably how today's work could be accomplished at all if it were not for information technology.

A close second for serious consideration is whether society needs to roll back, or at least slow down the growth of, self-imposed complexity. Perhaps systems can be built to support the complexity, but should we have to expand the resources so they can? Do we not have better goals to accomplish, with or without the systems? And, how can people be informed members of society if they themselves cannot keep up?

Buckholtz is a consultant in Washington, D.C., and San Francisco. Until recently, he was commissioner of the General Services Administration's Information Resources Management Service, where he led the deployment of computing and telecommunications throughout the U.S. government.

Executive Track

Mark D. Cox, former assistant commissioner for information systems development at the **Internal Revenue Service**, is newly in place as director of the **IRS' Phoenix District**. A 23-year IRS veteran, Cox has served in IS development since 1987. The division he now heads is responsible for all federal tax matters for the state of Arizona.

Meanwhile, in Missouri, **Ladd Ellis Jr.** is the new director of the **IRS Service Center** in Kansas City. Ellis, who joined the IRS in 1972 as a revenue agent, comes to his new post from a stint as assistant regional commissioner for data processing at the Chicago headquarters of the IRS Midwest region.

In Washington, D.C., the **Urban and Regional Information Systems Association (URISA)** recently elected three new members to its board of directors and selected **Randy Gschwind** as the board's president-elect. Gschwind, who is information center manager at the Department of City Development in Milwaukee, will serve a three-year term.

URISA is a 3,800-member, nonprofit organization dedicated to providing ongoing education related to automated information systems within local, state/provincial and federal governments and related private sector environments.

Last week marked a changing of the guard at **Computer Task Group, Inc.** Former IBM Professional Services Vice President **Gale S. Fitzgerald**, who has served as senior vice president of the Buffalo, N.Y.-based information technology consulting firm since 1991, has stepped up to the post of president and chief operating officer and has also been made a member of the board of directors.

Fitzgerald replaces **John P. Courtney**, who served as the firm's president and chief operating officer from 1984 until his retirement on July 1. Courtney remains a member of the firm's board.

Have you or a colleague in the information systems field recently been promoted? *Computerworld* would like to share the news with the rest of the IS community. Please contact Senior Editor Neil Margolis at (800) 343-6474 to pass along the news.

Calendar

JULY 18-JULY 24

Guide '93 Conference. Montreal, Quebec, July 18-23 — Contact: Guide International Corp., Chicago, Ill. (312) 644-6610.

Windows World. Mexico City, July 20-22 — Contact: World Expo, Framingham, Mass. (508) 879-6700.

Equipment Resources Planning Institute. Albuquerque, N.M., July 22-23 — Contact: Equipment Resources Planning Institute, Santa Monica, Calif. (310) 394-2997.

JULY 25-JULY 31

All about IBM '93. Aspen, Colo., July 26-28 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

AUG. 1-AUG. 7

Siggraph '93. Anaheim, Calif., Aug. 1-6 — Contact: Siggraph '93 Conference Management, Clarendon Hills, Ill. (708) 850-7843.

Downsizing Expo. Santa Clara, Calif., Aug. 3-5 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3890.

AUG. 8-AUG. 14

Sounds of Change: Emerging Technologies/Re-engineering State Government. Nashville, Aug. 9-11 — Contact: National Association of State Information Resource Executives, Lexington, Ky. (606) 231-1970.

AUG. 15-AUG. 21

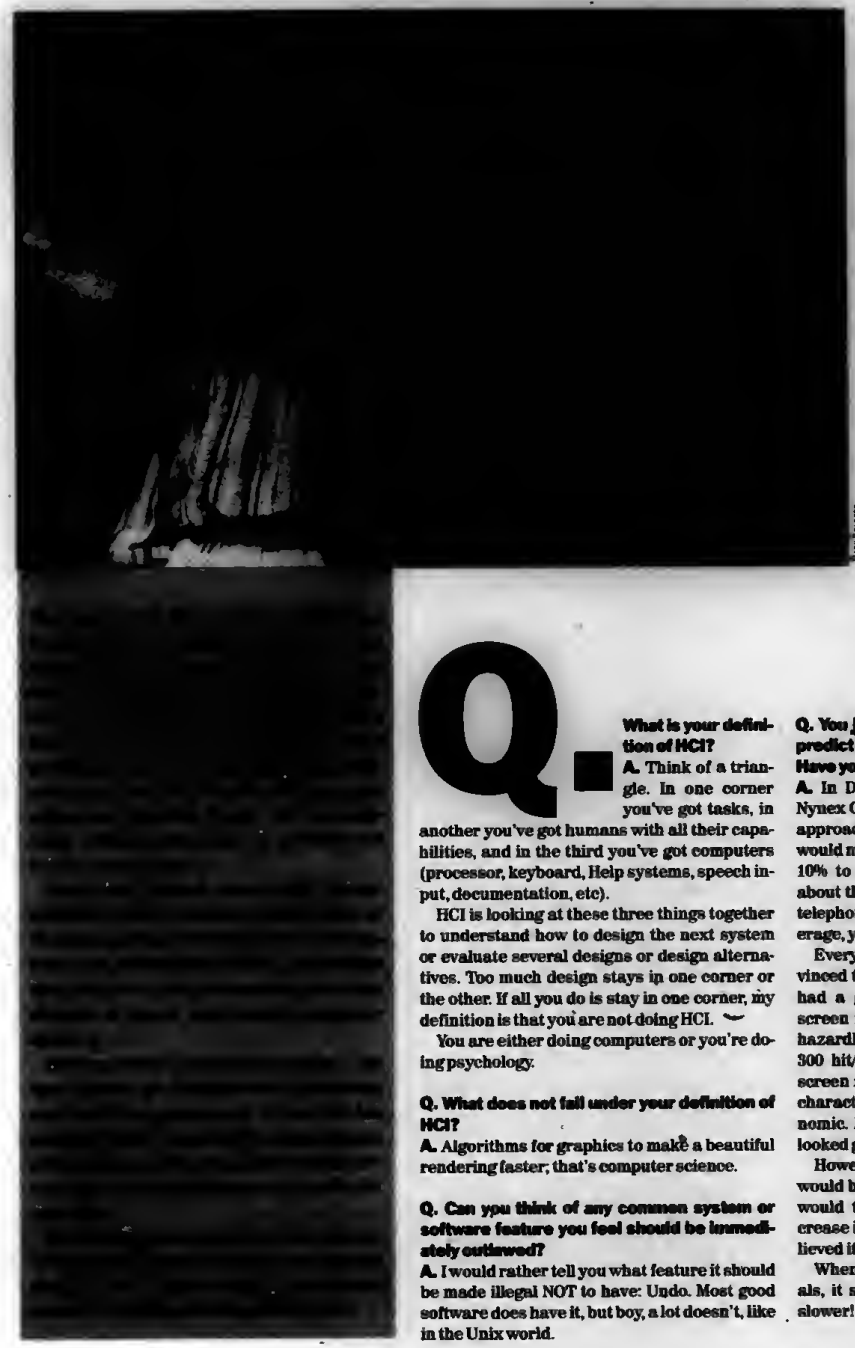
International Networking Conference '93. San Francisco, August 17-20 — Contact: Universities Space Research Association, Mountain View, Calif. (415) 390-0317.

Client/Server '93 East. Washington, D.C., Aug. 17-20 — Contact: CMP Conference & Exhibit Group, Manhasset, N.Y. (516) 562-5717.

AUG. 29-SEPT. 4

Structured Development Forum. Philadelphia, Aug. 31-Sept. 2 — Contact: Espirit Systems Consulting, Inc., West Chester, Pa. (215) 436-8290.

Users' champion



MARK LINSTER

There's nothing Bonnie John hates more than a system that gets in its user's way. A sworn enemy of poor interfaces and cryptic error messages, John has spent years crusading for user-centered design.

Bonnie John

Age: 37 (married, two children)

Schooling: Bachelor's degree, mechanical engineering, from Cooper Union; master's degree, mechanical engineering, from Stanford University; master's and Ph.D., cognitive psychology, from Carnegie Mellon University

Notable work: Responsible for the design and usability of the Merlin phone system while on the technical staff at Bell Laboratories in late 1970s and early '80s

Q. What is your definition of HCI?

A. Think of a triangle. In one corner you've got tasks, in another you've got humans with all their capabilities, and in the third you've got computers (processor, keyboard, Help systems, speech input, documentation, etc).

HCI is looking at these three things together to understand how to design the next system or evaluate several designs or design alternatives. Too much design stays in one corner or the other. If all you do is stay in one corner, my definition is that you are not doing HCI.

You are either doing computers or you're doing psychology.

Q. What does not fall under your definition of HCI?

A. Algorithms for graphics to make a beautiful rendering faster; that's computer science.

Q. Can you think of any common system or software feature you feel should be immediately outlawed?

A. I would rather tell you what feature it should be made illegal NOT to have: Undo. Most good software does have it, but boy, a lot doesn't, like in the Unix world.

Q. You have developed several theories that predict how users will interact with systems. Have your theories been put to the test?

A. In December 1988, I was consulting with Nynex Corp. A workstation manufacturer had approached Nynex with workstations it said would make toll and assistance operators work 10% to 20% faster. Nynex was very excited about this. It has a rule of thumb: If you save a telephone operator one second per call on average, you save the company $3 million a year.

Everyone in the phone company was convinced that the new workstation was better. It had a graphical user interface, and it had screen information flowing logically, not haphazardly. It worked at 1,200 bit/sec. instead of 300 bit/sec. It used packet switching so the screen zipped right up entirely instead of one character at a time. The keyboard was ergonomic. Keys were logically placed. This thing looked good; everybody loved it.

However, I predicted the new workstation would be 3% slower than the one in use, which would translate to a $2.4 million annual increase in the costs of the company. Nobody believed it.

When information came back from field trials, it showed the operators were indeed 3% slower!

Users' champion, *page 72*

Users' champion

CONTINUED FROM PAGE 71

Q. What was the problem with the workstations?

A. It was only when we studied the complex interaction of talking, seeing and keying that we knew the proposed workstation would be slower.

The vendor had reduced the number of operator keystrokes, and if operators were doing things serially, that would have reduced the time. But because activities go on in parallel, the picture was much more complex. It was a matter of a bunch of little problems adding up.

[One problem] was that the vendor took two keystrokes out of the middle of a call and put an additional keystroke at the end. This reduced the keystrokes by one, but the stroke at the end of the call was done on the critical path. The net reduction of one keystroke actually increased the time of the call.

Q. The idea of holding vendors accountable for user-unfriendly systems became a public issue during an appeals case in which you appeared as an expert witness. Can you describe the case involving AT&T, IBM and Lockheed?

A. I am under protective order, so the details of the case are private to the companies. What I can tell you is that AT&T, IBM and Lockheed all bid to supply an office automation system to the Internal Revenue Service. The IRS chose AT&T's system, which was the most expensive at $1.4 billion. IBM's system cost $700 million while Lockheed's went for $900 million. IBM and Lockheed protested and appealed the decision.

The courts wanted to know if the added money the government has to spend to buy this system is worth it. How much easier is it? How much is it going to save? I had to quantitatively show that the AT&T system was worth the extra expense for the IRS in terms of human productivity.

Q. Can you describe your ideal computer system or software package?

A. The one that does what I want, not what I tell it to do. The ideal system would read my mind.

Q. Given the increasing publicity surrounding usability, are companies changing what they look for when they buy a system?

A. Before the discipline of HCI, buying a system was solely judged on whether it was cheaper and faster. And faster was defined by processor and communication speed, not in terms of the whole task that includes the person. That is how we have judged systems in the past. We're making small steps to getting rid of that thinking.

The bottleneck is becoming the information processing of the person, not of the system.

Q. What advice do you have for information systems staffers who want to ease the interaction between humans and computers?

A. If you are designing something, probably the most valuable and easiest thing to do is just videotape users. The important thing is not to forget the task — you have to know what your system is going to be used for.

For instance, I'm sure the manufacturer who wanted to sell Nynex its workstations analyzed how many keys an operator had to press and figured it could reduce keystrokes and all would be fine. What it didn't do was look at the whole task — talking, dead airtime, dead key time.

The other thing designers can do is ask users to think aloud. Just let people do what they normally do and wait for "critical incidents" — that is, a grunt or an exclamation of "Oh! That's great!" There are good incidents and bad ones. In this way, when you go back to redesign your system, you preserve the good pieces and get rid of the bad ones.

Q. What about advice for the actual design of the system?

A. The ability to transfer the knowledge users have about one application to another one is a measure of how integrated something could be, how usable from system to system. That has a tremendous impact on user learning time. Once you learn a particular application, how much do you know about some new one?

In the Macintosh world, for instance, a whole bunch of menu items are exactly the same and are in exactly the same place in different applications. Users know a lot about a new application before they've even seen it.

Q. Why are so many human/computer interfaces so bad?

A. Primarily it's because the designers cannot think like users. And they think they can. They make systems that are good for designers. But more and more people are reacting to the fact that there are so many boxes of software hanging on shelves and not being used because they're so bad. There are people who are waking up to this and whole companies that are waking up to this. Apple, for instance, is committed to user testing.

But there are still a lot of designers that haven't woken up. The Unix area has been much maligned in this regard for over 10 years.

Mark Sullivan

"The ideal system would read my mind."

Q. Proponents of ideas such as ubiquitous computing — in which computers will embed themselves in everyday objects — promise that tangible user interfaces will give way to more intuitive-type inputs, such as voice. As these ideas become real, will the need to worry about HCI fade?

A. As computers become more ubiquitous and more exotic in their I/O, people are going to become more and more of a bottleneck.

Right now, the computer just dumps everything at the user, and the person has to figure it out. But the person is getting overwhelmed.

As we start introducing artificial intelligence for intelligent agents and data visualization and things like that, we have an opportunity to make things more intelligible for people, but we also have an opportunity to screw it up and start hiding the information they really need.

I think HCI — that is, understanding tasks and humans — is going to become more and more important in the design of future systems. ■

According to the book The Design of Everyday Things *by Donald A. Norman (Doubleday), if you really want to mess up a system design, then do the following:*

Make things invisible. Don't let the user know what operation to do, and don't offer feedback.

Be arbitrary. Pick command names and actions that don't make intuitive sense.

Be inconsistent. Use a bunch of different rules. Create inconsistency in the way things are done in different modes.

Make operations unintelligible. Use unusual language, abbreviations and cryptic error messages.

Be impolite. Treat users like dirt.

Make operations dangerous. Make it easy to destroy important work.

But if you want a good design, the following qualities are important:

Visibility. Users can tell what's going on and what their options are.

A good conceptual model.

Good mappings. Users can determine the relationship between action and results; controls and effects; and system state and what is visible.

Feedback. Users know the results of their actions.

HOW DO WE KEEP COMPUTERWORLD FRESH?

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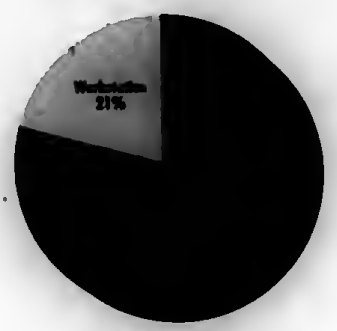

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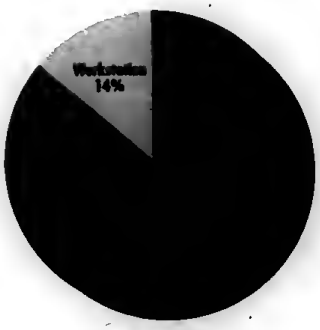

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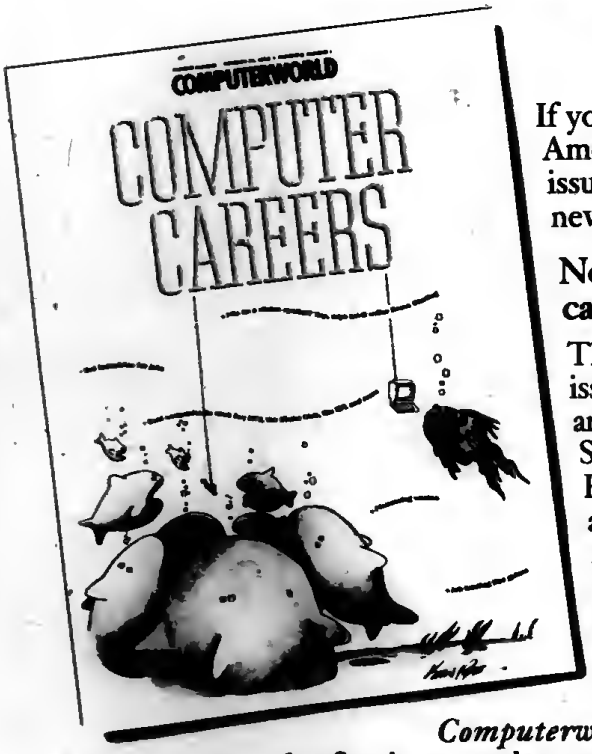

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UNIX: Are you prepared?

Companies are still hiring developers for proprietary systems but agree that learning the emerging standards is a must

By Alice Bredin

UNIX APPLICATION development. It's a hot skill, and companies want employees who have it. To land such a job or to stay on the cutting edge of the one you have, knowledge of emerging technologies and a willingness to learn are crucial.

Most experts agree that it's essential for anyone in the Unix area to be familiar with the standards. The important ones to watch include Posix and those emanating from the Object Management Group and Unix International.

"People have to invest time and ego in training themselves in the existing and emerging standards," says Nina Lytton, editor of "Open Systems Advisor," a Boston newsletter on multiplatform computing. "If you are in the airline industry or banking and you don't know the industry standards, you're in trouble."

Opinions on the level of knowledge necessary vary depending on who you talk to. Many companies are still working primarily in proprietary systems and are satisfied as long as employees keep up to date.

At Com Squared Systems, Inc., a St. Paul, Minn., records and document management application vendor, Vice President of Development Craig Wilson says Unix standards are something for the future. Industry awareness is important, but he says he does not expect new hires to program to standards. Because Wilson hasn't found too many that he can use, he is more interested in hiring people who can help figure out how to port from one proprietary system to another. "Unix is the future, and I can't deal in the future," he says.

Employers may not be asking for these skills now, but some experts say the capability to create applications using industry standards will soon be imperative. Their advice: Learn them now and become a hot commodity; don't and become extinct.

"You may choose to develop with unique interfaces, like HP, but you should do it knowing that you are restricting yourself," says Shane McCarron, project manager at Unix International, the Parsippany, N.J.-based trade association for Unix systems and related technologies.

"If you can say you know the difference between proprietary and open and you can make sure an application will run across any platform by adhering to standards, you'll be marketable."

Object-oriented programming is one area on which industry analysts and employers agree. C++ is the language of choice and is perceived as easier to learn for the many C programmers. However, Smalltalk is considered a good next step for people who know Cobol.

Wilson hires people who understand the difference between C and C++. He acknowledges, however, that there are few experts in C++, and he is willing to hire someone who still has learning to do. "If someone came in and told me they were an expert in C++, I'd be skeptical."

On the other hand, Dan Amedro, vice president of MIS at Hyatt Hotels Corp. in Chicago, looks for the ability to use object orientation in any language, not necessarily in C++.

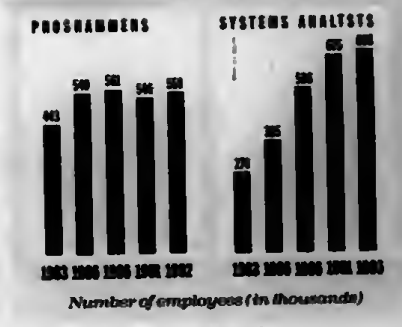
Amedro also looks for Unix programmers who are familiar with communications protocols — particularly people who can apply standards such as X.400 and X.25 to manage networks.

Who needs this type of background? Anyone who makes decisions about what applications are being developed, says Jim Brennan, senior director at WorkGroup Technologies, Inc., a Hampton, N.H., industry consultancy.

Once armed with this knowledge, look for jobs in retailing, banking, airlines and hotels. These industries offer services similiar to those of their competitors and are particularly interested in finding ways to create a competitive advantage. "Companies like these are competing on time and are cost-sensitive," Lytton says.

Bredin is a free-lance writer in New York.

JOB watch *A first in a series of closer looks at job types and employment trends*



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What employers won't teach

By Stephanie Wilkinson

"FIRE IN THE BELLY." That's what it takes to get experience with technology you don't work with every day, those who have been through the self-education process say.

Gaining exposure to new and/or hot technologies requires energy, stamina and a significant investment of personal time, but many information systems professionals are starting to regard this kind of investment in their future as a must.

"Nobody will look out for your career like you do, so you had better stay on top of it," says Terry Tippie, a systems engineer at Cabletron Systems, Inc. in San Jose, Calif.

More than 9 to 5

As an employee in the IS department at Boeing Corp., Tippie says he felt stuck in a dead-end job.

"It took me three to four years of educating myself before I was given a chance to prove my skills," he recalls. "This required staying after work until 8 or 9 o'clock, getting my hands on the hub, router or whatever I wanted to learn, reading the documentation cover to cover, then taking it apart and figuring out how it worked."

Sometimes companies will provide access to education or help you foot the bill, but don't count on it. Even at relatively enlightened companies, such as Shaw Industries, Inc., a carpet manufacturer in Dalton, Ga., there is often a gap between philosophy and reality.

For instance, although Shaw's IS director C. Rae Quinn says the company encourages the IS staff to seek out educational opportunities and will even pay half of their tuition, systems analyst Carlton Beard notes that time is often a sticking point.

"If I wanted to learn DB2, it would still be on my own time," Beard says.

Going it alone

More than likely, you'll be searching and paying for training on your own, so be prepared — it can be expensive. J. D. Cox, an independent networking consultant in Philadelphia who took a series of courses to become a Certified NetWare Engineer (CNE) for Novell, Inc.'s network operating system, warns that even basic certification carries a big price tag.

"It requires seven to eight courses, which run a couple of thousand dollars each. There's still a whole lot more I'd like to know, but I can't afford it right now." Instead, Cox has turned to books and manuals to give him a start on his new interest: wide-area networking.

As you begin to explore your options, you'll find that some of the approaches are less than unique, but those who have done it stand behind them. There are at least six simple things you can do to find the best source of training for the technology you want to learn:

- Contact the vendor. It often has the most complete knowledge of training options for its products.
- Talk to anyone who knows what you want to learn. Experts are often generous with their knowledge. Ask how they got their own training and what's required.
- Call your local chamber of commerce. Members may give computer training as part of community service projects or run local seminars.
- Invest in books and magazines. If you know the basics, your training will be more effective.
- Join user groups. Even if the group isn't exactly focused on the technology you want to learn, chances are someone there shares your interest.
- Visit local training vendors. "Shop around for prices and availability," suggests Michelle McLean, manager of professional computing services at Casco Northern Bank in Portland, Maine. Do anything that will give you hands-on experience.

"In the end, determination is the best teacher," Tippie says.

Wilkinson is a free-lance writer in Charlottesville, Va.

Hot technologies cost

- **Novell's NetWare:** Novell offers home computer-based courses that range from Introduction to Networking ($295) to NetWare 4.0 Administration ($1,195). To become a CNE, it is not necessary to take the courses, but you must pass six tests that cost $85 each. For more information, call (800) 638-9273.

- **AS/400:** To become an Application System/400 system operator or advanced system operator, you can take a computer-based training course or attend a class at one of IBM's training facilities located in most major cities. The cost, either way, is $945. Call (800) 426-8322 for more information.

- **Object-oriented programming:** James Martin Insight, Inc. in Naperville, Ill., offers several video seminar courses on object technology. Call (708) 369-3000 and ask for the marketing department.

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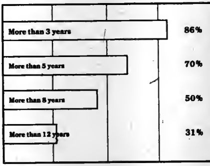

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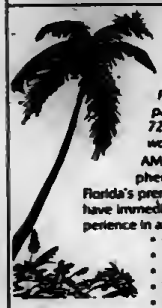

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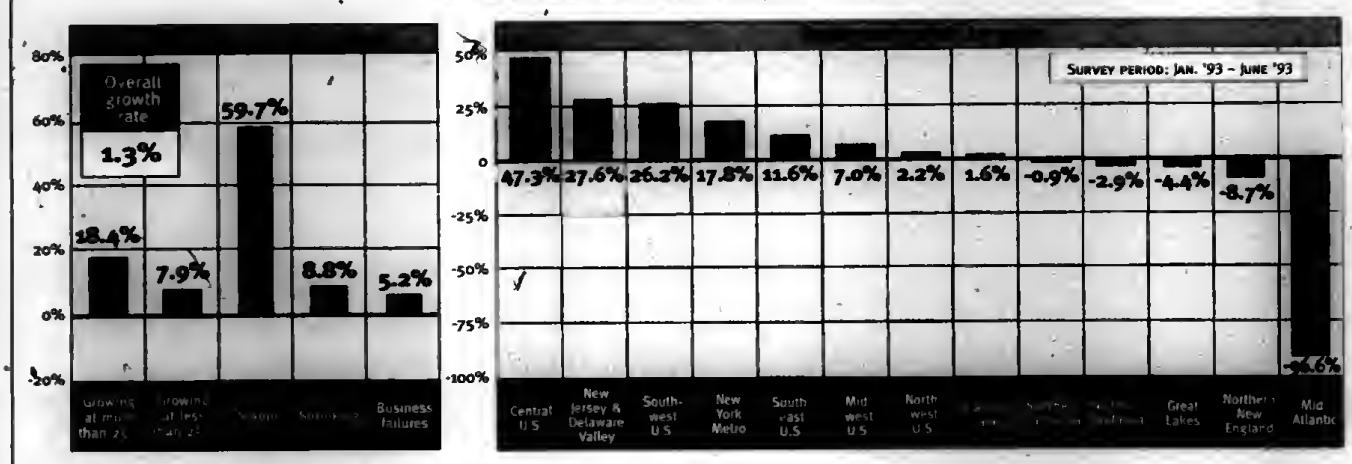

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Customize your own LAN personnel team

By Robert J. Panza

For companies with complex networks, building a team to install, support and maintain local-area networks is neither one-stop shopping nor a straightforward deal.

You might ask a technology consultant to slide into a value-added reseller role to offer broad technical know-how and a total solution. A computer retail store might maintain a team of LAN consultants. Another large company might hire a management consulting firm to act as a general contractor.

The root of the problem is the number of tasks associated with LAN installation and maintenance, combined with the chameleon-like nature of the various providers' roles. It's difficult to determine where to turn, not to mention assessing what you need.

Services offered

LAN services can be shared by in-house personnel as well as outside providers. A combination works best in large companies with complex networks. At some point, most firms use an outside provider. Depending on what you need, services range from the very basic to the very technical. These include design and engineering consulting services, systems integration, installation, hardware and software maintenance, support and repairs, technical support and troubleshooting.

Large firms with 500 to 1,000 complex networks (more than 100 nodes) generally use all of the providers listed (see chart) to fill particular niches, while firms with smaller networks usually limit the providers to three or fewer.

Generally, it is very efficient to outsource routine work, such as hardware maintenance or work that demands a high level of technical expertise, such as interoperability of heterogeneous systems or advanced routing technology.

In theory, the profit margin of the provider should make outsourcing expensive. In reality, in-house operations are often very inefficient due to politics and other disincentives. However, total outsourcing across the board is a copout by in-house management.

Panza is a LAN consultant affiliated with the consulting firms EJR Computer Associates in Hoboken, N.J., and The Systems Expert, Inc. in Woodbury, Conn.

Provider	Strengths	Weaknesses
	Personalized service; good product knowledge.	Limited experience; weak in software and services; usually better with hardware; not always cost-effective.
	Low prices; good quality; hardware focus; most offer national on-site service themselves or through third-party firms; more cost-effective than the retail store.	Long-distance; impersonal; difficult to control; risks the chance of being locked into its products.
	Highest level of product expertise; geographic breadth; often puts consultant on-site; hardware-oriented.	Technical expertise might be limited to product line; product bias; limited system integration.
	Combines consulting and products; can deliver a total solution in horizontal and vertical markets; gives value-added services.	Product bias; not always cost-effective.
	Knows core business applications.	LAN technology limited to routine tasks such as network administration, loading software and setting up users.
	One of the more sophisticated sources besides the technology expert; deals with enterprise networks and a wide range of products and problems; geographic breadth.	Expensive; exercises a high degree of control.
	Often hired by other providers; offers expertise in various aspects of LAN technology that is broader than the product specialty vendor; routine support.	Limited knowledge of non-LAN technology; niche-oriented.
	Does almost everything; has access to many resources; works well with upper management; geographic breadth.	Expensive; difficult to control.
	A guru; in-depth mastery of broad range of LAN and related technology; flexible; cost-effective; engineering focus.	Limited availability and resources.

Source: Robert J. Panza

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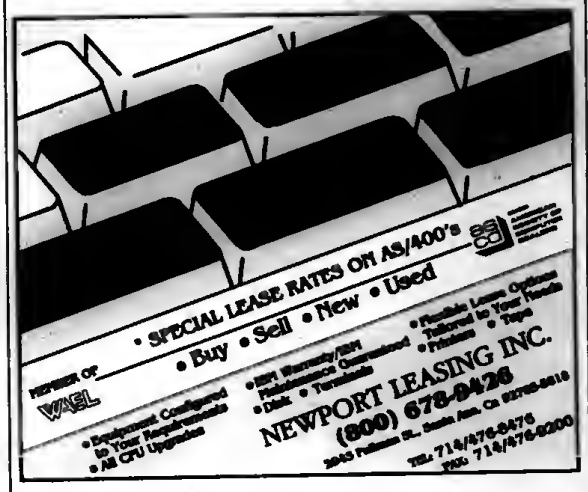

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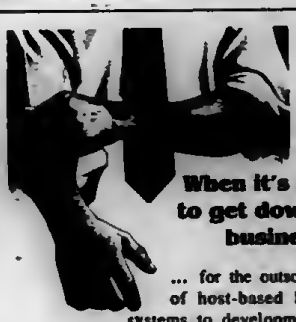

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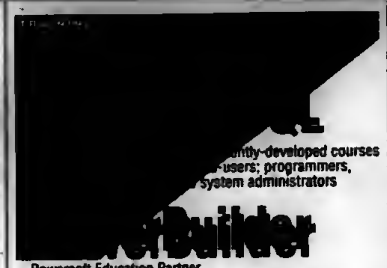

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Friday Stock Ticker

Gainers / Losers

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Gainers		Losers	
Intersolv Inc.	31.9	Meca Software	-38.8
MathSoft	31.0	Northern Telecom Ltd. (L)	-27.5
Weitek	27.5	Comnitronics Corp.	-22.8
Chips and Technologies	25.9	Network Computing Devices	-17.5
Easel Corp. (L)	25.0	McAfee Associates	-15.5
Knowledgeware Inc.	23.1	CompUSA Inc.	-14.8
Merisel	19.0	Interleaf Inc.	-14.7
American Mgmt. Systems	18.0	State of the Art	-11.4

Dollar

Gainers		Losers	
Computer Sciences (H)	5.25	Northern Telecom Ltd. (L)	-10.13
BMC Software Inc.	8.00	Adobe Systems Inc.	-7.50
Storage Technology	6.50	Compaq Computer Corp	-5.50
Newbridge Networks Corp.	4.13	CompUSA Inc.	-4.88
Oracle Corp. (H)	3.75	Meca Software	-5.88
Rainbow Technologies Inc.	3.50	Hewlett Packard Co.	-3.00
Cheyenne Software Inc. (H)	3.13	Zilog Inc.	-2.50
American Mgmt. Systems	2.88	Intelligent Info. Systems (H)	-2.25

[redacted]

Chipsoft does not reach Meca

Even though the proposed union of **Chipsoft, Inc. (CSFT)** and **Meca Software, Inc. (MECA)** would have created a dominant position in the tax software market for the combined firm, analysts and investors said it may have been for the best when Chipsoft left its rival standing at the altar last week.

Chipsoft's intended buyout of Meca was scrapped in light of threatened federal antitrust litigation. Chipsoft would have emerged with 70% of the personal tax preparation software market, according to data from Donaldson, Lufkin & Jenrette Securities Corp. Chipsoft's Turbo Tax and MacIn-Tax packages currently hold 56% of the market.

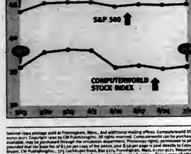
Meca shares dropped precipitously when Chipsoft's offer fell through. Meca's share price dropped 38% to close at 6¼ on Wednesday.

However, Meca remains a likely acquisition target, analysts said. "If Meca is low on cash, someone might be able to shoot them an offer south of what they were going to get from Chipsoft," said Mike Stanek, senior technology analyst at Piper Jaffray, Inc. Several analysts mentioned **Computer Associates International, Inc. (CA)** and **Intuit, Inc. (INTU)** as possible suitors for Meca.

Chipsoft issues actually rose on the news, hiking up 1½ on Wednesday. "I think investors were concerned about the impact the merger would have on Chipsoft's earnings and growth," said Peter Rogers, a software analyst at Robertson Stephens & Co.

—Derek Slater

STOCK TRADING INDEX



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COMMUNICATIONS AND NETWORK SERVICES						
OTC	40.00	9.63	3COM Corp	26.75	0.13	0.5
NYS	81.00	63.38	American Info Techs Corp	79.63	1.13	1.4
NYS	63.88	40.63	AT&T	62.25	0.13	0.2
OTC	6.06	0.75	Artel Communication Corp	3.13	0.13	4.2
OTC	24.50	10.75	Banyan Systems Inc.	17.00	0.25	1.5
NYS	59.00	44.25	Bell Atlantic Corp. (H)	58.00	0.50	0.9
NYS	57.50	46.75	Bellsouth Corp	54.63	-0.13	-0.2
NYS	8.50	3.63	Bolt, Beranek & Newman (H)	7.88	0.38	5.0
OTC	18.50	9.50	Brooktrout Technology	13.75	0.00	0.0
NYS	108.50	47.00	Cabletron Systems	107.38	2.63	2.5
OTC	22.75	5.00	Centigram Communications	21.50	-0.50	-2.3
OTC	43.50	19.00	Chipcom Corp	41.00	-1.25	-3.0
OTC	57.25	22.13	Cisco Systems Inc. (H)	55.25	1.50	2.8
OTC	16.38	5.50	Compression Labs Inc.	13.50	1.00	8.0
OTC	36.00	12.25	CrossComm	31.25	2.25	7.8
OTC	4.63	1.50	Data Switch Corp.	2.75	0.13	4.8
NYS	19.88	12.50	Digital Comm. Assoc.	13.13	0.63	5.0
OTC	12.75	4.00	Digital Systems Int'l Inc (L)	4.75	0.00	0.0
OTC	51.25	4.38	DSC Communications (H)	51.25	1.25	3.5
OTC	9.50	5.00	Fibronics Int'l Inc	6.00	-0.50	-7.2
OTC	24.00	8.75	FiNet Corp	21.50	-0.25	-2.1
OTC	4.50	1.50	Gandalf Technologies Inc	2.88	0.00	0.0
OTC	2.06	0.69	Gateway Communications	1.13	0.06	5.8
NYS	15.75	2.88	General Datacomm Inds	14.00	0.13	0.9
ASE	3.75	2.00	GII Video	2.63	-0.06	-2.3
NYS	37.75	31.75	GTE Corp	36.13	-0.13	-0.3
NYS	86.75	62.75	ITT Corp. (H)	85.13	1.25	1.5
OTC	57.13	30.75	MCI Communications Corp	56.63	0.25	0.4
OTC	6.75	2.25	Microcom Inc.	3.44	0.06	1.8
OTC	24.25	4.75	Netrix Corp.	5.00	-0.25	-4.8
OTC	19.00	8.25	Network Computing Devices	8.25	-1.75	-17.5
NYS	15.00	5.50	Network Equipment Tech	7.50	0.13	1.7
OTC	20.13	8.00	Network General	11.25	1.50	15.4
OTC	15.75	8.13	Network Systems Corp. (L)	9.50	1.00	11.8
OTC	47.50	7.50	Newbridge Networks Corp.	47.38	4.13	9.5
NYS	46.00	26.25	Northern Telecom Ltd (L)	26.75	-10.13	-27.5
OTC	39.75	22.50	Novell Inc.	26.25	-1.00	-3.7
NYS	92.50	79.00	Nynex Corp	90.25	2.50	2.8
OTC	30.00	14.50	Octel Communications Corp	22.25	1.50	7.2
OTC	6.13	3.38	Penril Data Comm Networks	3.75	-0.38	-9.1
OTC	30.50	10.75	PictureTel Corp	22.50	1.88	9.1
OTC	11.25	4.63	Proteon Inc	5.13	0.25	5.1
NYS	35.00	15.00	Scientific Atlanta Inc.	32.38	0.75	2.4
NYS	40.75	31.44	Southwestern Bell Corp.	39.13	1.88	5.0
NYS	34.50	21.63	Sprint Corp. (H)	34.13	0.38	3.3
OTC	27.00	10.50	Standard Microsystems Corp	16.00	0.25	1.6
OTC	18.50	8.88	StrataCom Inc.	13.13	1.38	11.7
OTC	42.75	9.75	SynOptics Communications	37.50	2.25	7.9
OTC	7.00	3.38	Telebit Corp.	3.38	-0.25	-6.9
OTC	9.50	2.13	Telematics Int'l Inc.	7.88	0.00	0.0
OTC	25.50	13.38	US Robotics	23.50	0.00	0.0
NYS	40.75	35.25	US West Inc. (H)	40.75	2.00	4.5
OTC	55.50	12.00	Wellfleet Communications	49.63	-0.25	-0.5
OTC	16.25	7.25	Xircom (H)	15.75	0.25	1.6
PCS AND WORKSTATIONS						
OTC	5.50	2.50	Advanced Logic Research	3.63	-0.13	-3.3
OTC	65.25	38.50	Apple Computer Inc. (L)	38.50	-1.50	-3.8
OTC	24.25	31.25	AST Research Inc.	14.75	-0.25	-1.2
NYS	10.25	2.50	Commodore Int'l (L)	2.88	0.13	4.5
NYS	61.75	24.25	Compaq Computer Corp.	48.13	-5.50	-10.3
OTC	49.88	16.00	Dell Computer Corp	18.25	-2.25	-10.7
NYS	88.25	50.25	Hewlett Packard Co	79.88	-3.00	-3.6
NYS	38.50	16.38	Silicon Graphics	37.63	1.25	3.8
OTC	41.00	23.38	Sun Microsystems Inc.	30.25	0.88	3.0
NYS	32.38	22.25	Tandy Corp.	29.50	0.50	1.7
OTC	7.00	2.25	Zeos International Ltd.	3.50	0.00	0.0
LARGE SYSTEMS						
ASE	10.50	4.63	Amdahl Corp	5.13	-0.13	-2.4
NYS	8.75	4.25	Convex Computer	5.00	0.00	0.0
OTC	6.13	1.88	Cray Computer	3.13	0.00	0.0
NYS	90.88	19.00	Cray Research Inc	27.75	1.75	6.7
NYS	13.88	7.50	Data General Corp	9.25	-0.75	-7.5
NYS	49.25	30.38	Digital Equipment Corp	40.88	0.13	0.3
NYS	39.00	26.88	Harris Corp. (H)	38.25	0.88	2.3
NYS	100.50	45.88	IBM	48.13	1.25	-2.5
OTC	22.00	5.50	Kendall Square Research	19.25	2.50	14.9
NYS	127.50	83.00	Matsushita Electronics	119.25	0.50	0.4
OTC	23.75	8.25	NetFrame	18.88	1.13	8.2
OTC	15.50	9.25	Parallan Computer	15.00	2.25	17.6
OTC	20.50	6.00	Pyramid Technology (H)	20.25	1.75	9.5
OTC	26.00	13.75	Sequent Computer Sys.	17.00	0.00	0.0
OTC	8.75	1.38	Sequoia Systems Inc.	2.00	0.00	0.0
NYS	48.38	29.50	Stratus Computer Inc.	32.88	2.25	7.3
NYS	16.88	9.88	Tandem Computers Inc.	11.75	0.13	1.1
OTC	22.50	10.63	TriCord Systems (H)	21.75	1.88	9.4
NYS	13.88	7.75	Unisys Corp.	12.13	0.63	5.4
SOFTWARE						
OTC	74.00	25.25	Adobe Systems Inc.	59.00	-7.50	-11.3
OTC	20.75	10.25	Aldus Corp.	16.50	0.50	3.1
OTC	14.25	5.50	American Software Inc	7.63	-0.13	-1.6
OTC	28.13	9.75	Ask Computer Systems	10.88	0.13	1.2
OTC	56.50	32.25	Autodesk Inc.	54.50	2.00	3.8
OTC	13.00	2.50	Bachman Info. Systems	3.06	0.06	2.1
OTC	43.00	32.00	BGS Systems Inc.	32.00	-0.13	-0.4
OTC	84.13	37.25	BMC Software Inc	54.50	8.00	9.8
OTC	28.25	17.00	Boole & Babbage	25.50	1.25	5.2
OTC	49.00	17.50	Borland Int'l Inc.	21.50	-1.25	-5.5
OTC	5.50	3.00	CE Software	3.50	0.00	0.0
ASE	31.88	6.25	Cheyenne Software Inc. (H)	31.88	3.13	10.9
OTC	19.50	8.25	ChipSoft	10.25	0.00	0.0
OTC	9.13	5.63	Cognos Inc.	7.50	0.50	7.1
NYS	31.50	11.25	Computer Associates	20.75	0.38	1.8
NYS	12.50	2.75	Computervision Corp	3.38	-0.25	-6.9
OTC	34.25	19.25	Compuware Corp	27.50	1.75	6.8
OTC	14.75	5.75	Comshare Inc.	6.00	-0.25	-4.0
OTC	17.25	10.75	Corel Corp.	15.50	-1.00	-6.1
OTC	11.25	5.00	Easel Corp. (L)	6.88	1.38	25.0
OTC	25.25	12.00	6th Dimension	10.63	0.13	1.2
OTC	19.50	5.25	Frame Technology (L)	5.75	0.00	0.0
OTC	20.75	8.50	Group 1 Software (L)	8.50	0.00	0.0
OTC	35.25	10.25	Gupta	18.25	0.75	4.3
OTC	8.75	3.75	Hogan Systems Inc.	8.13	0.38	4.8
OTC	75.75	11.25	IMRS	19.25	1.13	6.0
OTC	38.00	25.00	Information Resources (H)	35.13	0.13	0.4
OTC	26.75	6.06	Informix Corp (H)	26.00	2.25	9.5
OTC	16.75	8.88	Intergraph Corp.	9.50	0.13	1.3
OTC	13.63	6.88	Interleaf Inc.	7.25	-1.25	-14.7
OTC	18.00	5.50	Intersolv Inc.	7.75	1.88	31.9
OTC	18.00	2.25	Knowledgeware Inc.	12.00	2.25	23.1
OTC	54.75	26.00	Legent Corp.	34.75	1.00	-2.8
OTC	37.00	14.25	Lotus Development	33.25	0.75	2.3
OTC	23.00	6.50	MathSoft	9.50	2.25	31.0
OTC	23.25	5.25	McAfee Associates	6.13	-1.13	-15.5
OTC	11.63	1.88	Meca Software	6.13	-5.88	-38.8
OTC	12.00	5.25	Mentor Graphics	10.13	-0.25	-2.4
OTC	46.00	27.25	Micro Focus	31.63	-0.13	-0.4
OTC	14.50	4.50	Micrografx Inc.	5.75	-0.25	-4.2
OTC	98.00	65.50	Microsoft Corp	87.25	-0.50	-0.6
OTC	49.75	13.75	Oracle Corp. (H)	49.75	3.25	7.0
OTC	34.25	15.38	Parametric Technology	32.25	2.50	8.4
OTC	40.50	22.50	PeopleSoft	30.75	1.25	4.2
OTC	7.13	3.50	Phoenix Technologies	5.00	-0.38	-7.0
OTC	40.00	22.00	Powersoft	28.63	1.13	4.1
OTC	41.50	17.00	Platinum Software	25.00	1.50	6.4
OTC	25.00	11.25	Platinum Technology	11.88	-0.38	-3.1
OTC	61.50	32.25	Progress Software Corp.	40.00	1.25	3.2
OTC	7.38	2.50	Quarterdeck Office Sys.	3.25	-0.13	-3.7
OTC	28.75	13.75	Rainbow Technologies Inc.	28.75	3.50	13.9
OTC	12.25	4.00	Rasterops	9.13	0.50	5.8
OTC	15.25	3.63	Ross Systems	11.25	-0.75	-6.0
OTC	22.50	9.63	Sapiens Intl. Corp. N.V.	25.88	0.38	1.5
OTC	14.50	6.63	Software Publishing Corp.	8.63	-0.50	-7.0
OTC	12.00	2.00	Software Toolworks Inc.	10.00	0.38	3.9
OTC	3.50	0.25	Spinnaker Software	1.38	0.19	15.7
OTC	32.75	3.25	State of the Art	7.75	-1.00	-11.4
NYS	24.63	15.00	Sterling Software Inc.	20.00	1.50	8.1
OTC	21.50	8.00	Struct. Dynamics Research	15.88	-0.50	-3.1
OTC	76.50	22.75	Sybase Inc. (H)	71.88	-0.63	-0.9
OTC	37.25	5.88	Symantec Corp.	12.63	-1.38	-9.8
NYS	12.50	5.25	Systems Center Inc.	10.75	0.50	4.9
OTC	25.50	10.00	System Software Assoc.	20.00	0.75	3.9
OTC	6.50	2.50	Trinzic Corp.	3.00	0.00	0.0
OTC	22.75	9.13	ViewLogic Systems	17.88	-0.88	-4.7
OTC	21.50	6.75	Walker Interactive Systems	7.00	-0.25	-3.4
OTC	5.38	1.38	Wordstar	3.63	-0.08	-2.0
SEMICONDUCTORS						
NYS	27.88	7.38	Advanced Micro Devices	23.75	2.25	10.5
NYS	21.38	9.38	Analog Devices Inc.	19.88	1.00	5.3
OTC	25.63	7.63	Atmel Corp. (H)	25.63	1.00	4.1
OTC	8.63	2.75	Chips and Technologies	4.25	0.88	25.9
OTC	50.25	13.00	Cirrus Logic	17.25	-0.25	-1.4
NYS	14.25	7.50	Cypress Semiconductor Corp (H)	14.25	1.25	9.6
NYS	16.13	8.75	Dallas Semiconductor	15.00	1.25	9.1
OTC	60.63	27.13	Intel Corp.	54.00	-0.75	-1.4
NYS	18.00	6.88	LSI Logic Corp. (H)	15.50	0.50	3.3
OTC	33.25	14.00	Lattice Semiconductor	26.50	0.75	2.9
NYS	38.50	13.63	Micron Technology (H)	38.50	2.25	6.2
NYS	88.63	37.63	Motorola Inc. (H)	85.63	0.00	0.0
NYS	16.63	8.50	National Semiconductor (H)	18.00	-0.75	-3.5
OTC	16.50	6.50	Sierra Semiconductor	7.00	0.00	0.0
OTC	46.25	22.25	Synopsys (H)	46.88	1.88	4.4
NYS	72.50	36.00	Texas Instruments (H)	68.88	0.38	0.5
OTC	10.50	6.00	VLSI Technology (H)	10.50	1.38	14.7
OTC	14.00	2.13	Weitek	11.00	2.38	27.5
ASE	9.63	3.63	Western Digital Corp. (L)	3.88	0.13	3.3
OTC	39.25	14.50	Xilinx (H)	38.50	2.00	5.5
OTC	33.00	13.88	Zilog Inc.	26.25	-2.50	-8.7
PERIPHERALS/SUBSYSTEMS						
OTC	40.25	11.75	American Power Conversion (H)	38.00	0.25	0.7
OTC	26.16	13.84	Banctec Inc.	17.50	-0.25	-1.4
OTC	18.00	5.00	Cambex Corp. (L)	5.25	-0.50	-8.7
ASE	18.50	5.50	Comnitronics Corp.	5.50	-1.63	-22.8
NYS	25.50	9.00	Conner Peripherals (L)	10.00	0.63	6.7
OTC	38.50	10.25	Creative Technologies Inc.	29.25	1.50	5.4
OTC	30.75	14.25	Data Race Inc.	17.25	1.50	9.5
ASE	17.00	4.75	Dataram Corp.	8.88	-0.13	-1.4
NYS	21.88	5.06	EMC Corp. (H)	21.75	1.13	5.5
OTC	10.50	5.50	Emulex Corp	6.63	-0.13	-1.9
OTC	19.00	13.25	Evans & Sutherland	15.50	0.00	0.0
OTC	33.00	8.63	Exabyte (L)	10.13	0.88	9.5
OTC	20.75	7.09	Intelligent Info. Systems (H)	26.25	-2.25	-7.9
OTC	8.88	3.75	Iomega Corp.	3.88	-0.25	-6.1
OTC	21.25	5.75	IPL Systems Inc.	7.75	-0.25	-3.1
OTC	24.00	10.75	Komag Inc.	16.63	-0.63	-3.6
OTC	19.63	3.75	Maxtor Corp. (L)	6.50	-0.13	-1.9
OTC	11.25	5.75	Micropolis Corp.	6.50	0.25	4.1
NYS	117.00	95.75	3M Corp	108.00	0.00	0.0
OTC	7.75	6.00	Printronix Inc.	6.88	0.13	1.9
NYS	17.75	6.88	QMS Inc	8.13	-0.88	-9.7
OTC	37.88	9.75	Quantum Corp.	11.25	-0.13	-1.1
OTC	12.75	3.13	Radius Inc.	3.75	-0.25	-6.3
NYS	16.50	7.63	Recognition Equipment	14.25	-0.13	-0.9
OTC	13.88	4.50	Rexon Inc	6.50	0.19	2.9
OTC	22.38	12.00	Seagate Technology	16.38	1.00	6.5
NYS	45.00	18.00	Storage Technology	40.00	4.50	12.7
NYS	27.88	16.88	Tektronix Inc.	25.88	1.50	4.2
NYS	88.88	68.38	Xerox Corp	77.88	-1.63	-2.0
SERVICES						
OTC	23.75	14.25	American Mgmt. Systems	18.88	2.88	18.0
NYS	4.75	2.38	Anacomp Inc. (L)	2.88	0.38	15.0
OTC	33.73	16.25	Analysts Int'l	29.50	0.38	1.3
NYS	50.13	38.75	Auto Data Processing	48.88	0.75	1.6
NYS	17.25	11.75	Ceridian Corp.	14.50	-0.25	-1.7
NYS	17.38	13.13	Comdisco Inc.	16.50	0.00	0.0
OTC	8.25	4.50	Computer Horizons	7.25	-0.50	-6.5
NYS	83.88	52.00	Computer Sciences (H)	83.88	5.25	6.7
NYS	9.25	6.50	Computer Task Group	7.50	0.50	7.1
NYS	40.50	22.00	CompUSA Inc.	28.00	-4.88	-14.8
OTC	14.25	6.00	Corporate Software	11.25	0.25	2.3
OTC	19.25	7.50	Egghead Discount Software	8.25	-0.13	-1.3
NYS	35.88	25.23	General Motors E (EDS)	29.50	-2.13	-6.9
OTC	25.50	9.75	Inacom Corp.	20.50	-0.25	-1.2
OTC	15.50	6.50	Intelligent Electronics	15.00	0.25	2.0
OTC	13.00	6.63	Merisel	12.50	2.00	19.0
OTC	16.50	5.75	Microage Inc. (H)	14.25	-1.25	-8.1
OTC	43.00	23.00	Paychex	40.88	1.88	4.8
NYS	87.25	32.88	Policy Management Sys	36.13	-0.50	-1.4
NYS	38.50	16.81	Reynolds and Reynolds	37.75	1.38	3.8
OTC	33.00	22.00	SEI Corp	32.00	1.25	4.1
OTC	24.50	17.75	Shared Medical Systems	23.50	0.50	2.2
OTC	12.63	5.25	SHL Systemhouse	10.00	-0.50	-4.8
OTC	30.00	18.25	Software Spectrum Inc.	30.00	1.00	3.4
OTC	33.25	27.50	Sungard Data Systems	30.25	0.00	0.0
NYS	4.50	1.13	Ultimate Corp	3.38	0.13	3.8

KEY: (H) = New annual high reached in period (L) = New annual low reached in period. Copyright Nobody International, Inc. Louisville, CO. This information is based on sources believed to be reliable, and while extensive efforts are made to assure its accuracy, no guarantees can be made. Nobody International and Computerworld assume no liability for any inaccuracies. For phone numbers, addresses, or any additional financial information on any of the above companies call Nobody International at (303) 666-5903.

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Briefs

Oracle soars

Oracle Corp. credited strong database sales in the Unix arena for a 31% jump in fourth-quarter revenue to $473 million. Profits in the period ended May 31 more than doubled to $69 million, the Redwood City, Calif., company said. For fiscal 1993, sales topped $1.5 billion, up 28% from $1.2 billion last year. Net profits grew 130% to $142 million.

Convex results to fall

Convex Computer Corp. said it expects to report a second-quarter loss on revenue of less than $55 million, results that were below analysts' expectations. The Richardson, Texas, supercomputer maker said near-term demand was below expectations, though it is seeing interest in its data management and scalable processors. Final results will be released July 26.

Progress grows

Progress Software Corp. posted net profits of $3 million in its second quarter ended May 31, an increase of 39% from the same quarter last year. Sales in the period increased 35% to $26.6 million, the Bedford, Mass., company said.

SHORT TAKES AST Research, Inc. reached an agreement to acquire Tandy Corp.'s manufacturing facilities in Texas and Scotland, its pen-based and multimedia product lines and its Grid sales operation. AST will also supply PCs to Tandy under a three-year agreement.... Lotus Development Corp. completed its acquisition of Approach Software Corp.... American Management Systems, Inc. purchased 300,000 shares of its common stock owned by IBM for $4.8 million, decreasing IBM's equity interest to less than 5%.... OpenVision has acquired Demax Software, a developer of Unix and VMS security management software.

Report writer sales take off

Users empowered by ability to import relational data to desktop applications

By Derek Slater

■ You may or may not have ever heard of IQ Software, Inc. Then again, you might be using the company's report writer without realizing it.

The Norcross, Ga., software firm has drawn some attention by posting $15.2 million in fiscal 1993 revenue, good enough to make *BusinessWeek*'s list of the 100 hot-growth companies in the U.S.

A big portion of that income comes from resellers and vertical application developers that relabel IQ Software's report writer software.

IQ offers two report writer products: Intelligent Query (IQ) and IQ Access. IQ includes a full-screen painter and lets end users design ad hoc database reports without any knowledge of the underlying database structure.

User's choice

IQ Access, released earlier this summer, pulls information out of the database and reformats it for whatever desktop application the user selects, including popular spreadsheets and word processors.

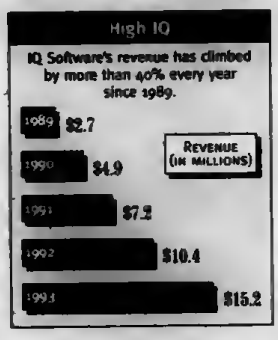
Robert Ott, vice president of sales at IQ Software, said IQ targets heterogeneous computing environments. "Many users have to access several file systems and databases, and we read a number of formats. Plus we're multiplatform," Ott said. IQ runs on approximately 35 Unix-based platforms in addition to DOS-based systems and Digital Equipment Corp. VAX platforms.

Expanded reach

Beta-test users also expect the new Windows version of IQ to be ready for general availability before the end of the year, opening new market opportunities for IQ.

Continuing to grow rapidly will be a challenge, though, for several reasons. First, the total report writer market is worth approximately $450 million, with third-party products such as IQ accounting for $120 million, according to Laura Lederman, an analyst at William Blair & Co.

More small competitors are jockeying for space in the Windows report writer market.



Tough act to follow

IQ Software tallied record revenue and profits for its first fiscal quarter, which ended in April. Revenue for the quarter was $4.3 million, with a profit of $663,000. The Norcross, Ga., company went public last year.

This means IQ Software may have to expand into other product areas to continue its growth.

Vendor threat

More fundamentally, the market interest displayed by big relational database management system companies will be a crucial issue for IQ Software. Lederman said an aggressive push into the report writer technology by Oracle Corp. and its ilk could put the squeeze on third parties.

Until now, that has not happened. Ott said IQ Software has worked with the Ingres Products Division of The ASK Group, Inc. to provide an end-user solution that Ingres can recommend to its DBMS customers.

However, Sybase, Inc. recently purchased SQ Software, Inc.'s SQR and Easy SQR report writer products, which may signal that RDBMS vendors are growing less willing to concede any portion of the report writer market.

IQ offers a more elegant and simple product than the current generation of DBMS vendors' report writers, according to Jim Freeman, a lead software engineer at Atlantic Research Corp. "We looked at Oracle's products, but they weren't even in the running because they were just too complicated for the end user."

Orders for consulting tome reliable predictor of layoffs

By James Daly

Many a financial analyst will employ a carefully constructed matrix of profit projections and cash-flow capabilities before gazing into a crystal ball to determine if a struggling company is going to announce layoffs.

Alan Canton just checks to see how many books he has been selling.

Canton, the author of *Computer Money: Making Serious Dollars in High-Tech Consulting*, claims that by tracking the sales of his book, he often knows when and where the layoff ax will drop.

"The news of possible layoffs at Apple was no surprise," said Canton, a technical consultant in Fair Oaks, Calif. "We've received a bunch of orders from the Cupertino area [Apple's home office] in the past few weeks."

Analysts projected that anywhere from 1,000 to 2,000 of Apple Computer, Inc.'s 14,000-member work force may lose their jobs this summer as the company tries to pare its overhead and expense structure [CW, June 28]. Apple officials declined comment.

Crystal ball

Canton said when book sales increase in a certain area, he knows company insiders fear a layoff. Likewise, if attendance at one of his daylong seminars increases, Canton only has to look at the enlistment sheet before he figures out where the next layoffs will come from. With major layoffs at many high-tech employers during the past year, business has been brisk for his career-change companion.

Canton said his company is sometimes tipped off by outplacement firms.

"When they call and order a lot of books to be sent to certain locations, we pretty much know what is going on," he said.

As a longtime Apple follower, Canton said he thinks if the company does announce layoffs, the research and development department could be the most severely hit area.

R&D drain

During the past few years, John Sculley, Apple's former chief executive officer, pumped hundreds of millions of dollars into exploratory technologies ranging from voice recognition to infrared communication, and many are years away from fruition.

"Apple has too many people working on too many projects that won't come to market until cows fly," Canton said.

Judging from recent book orders, Canton is currently predicting cuts in the information systems departments at The Boeing Co. in Seattle and American Express Co. in Phoenix.

Plus, there is one other mystery contender. "I'm getting a lot of orders out of Torrance, Calif.," he said. "Something is definitely going on down there."

Are the folks at Hughes Aircraft Co. listening?

Wysiwyg

Illustration by Paulette Bogan

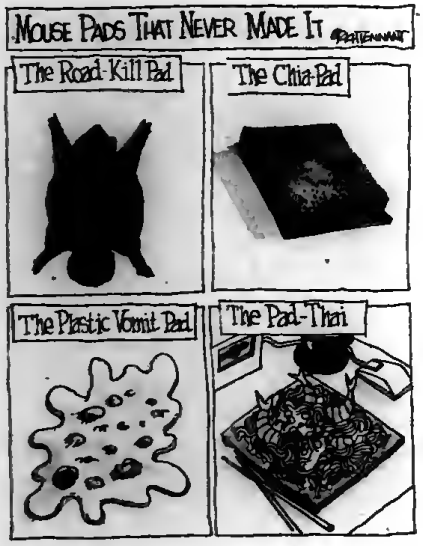
What a long, strange trip it's been...

About five or six years back, I was going on a business trip and was scheduled to fly into San Francisco at 9 p.m. on a flight from Boston. My seat was a middle seat in the middle section of a wide-body plane. We were told there would be a delay, and two hours later, we took off.

During the delay, the air-conditioning in the plane broke, and the temperature must have reached 90 degrees. While we were flying over St. Louis, the captain announced we had to make an emergency landing. No one was sure what was going on until we saw the paramedics come on board to take one of the passengers off: He had had a heart attack and died while we were in the air. When we got to San Francisco, the airport was closed, so we had to fly into Oakland. It was about 2 a.m. and all the car rentals were closed. Then a man who spoke broken English came up to me and asked if I wanted a ride. He was driving a 20-year-old car with a windshield that was so very cracked that you almost couldn't see out of it. When we finally reached my hotel, it was the wrong one: There were two hotels in San Jose with the same name. The driver finally got me to the right hotel around 3:30 a.m. I had a 7 a.m. appointment.

Craig Benson,
Chairman and COO,
Cabletron Systems, Inc.
Rochester, N.H.

The 5th Wave *by* Rich Tennant



Inside Lines

[illegible]

We'll ship no X terminal before its time

After years of selling at X terminals, Sun will shortly announce one, sources close to the company confirmed. Industry analysts were hearing about rumors to that effect, and some have already been briefed on the new product under a nondisclosure agreement. Sources said the X terminal, a "headless" low-end workstation, was designed and built by Sun rather than manufactured by an outside supplier. The unique twist with Sun's X terminal is that it reportedly can be upgraded to a regular Unix workstation with the addition of a processor board. Competitive pressures from other Unix workstation vendors that sell X terminals, plus demands from its customers, may have "SPARC'd" the move, sources said.

Midrange to go

A new middle computing concept should emerge soon from the somewhat unlikely environs of IBM's Rochester, Minn., labs — home of the AS/400. IBM has a laptable single-user AS/400 in the works that would be aimed mainly at software vendors and resellers looking to do on-site customer demonstrations and AS/400 programmers who want to take their work home or on the road with them. Pricing is expected to start in the $5,000 to $6,000 range for the machine, which would contain the OS/400 operating system in full. One issue still to be resolved is how the laptable would be sold. IBM's own sales force "is not all that interested in it," said Glenn Van Buenschoten, AS/400 system manager in Rochester.

Keep on truckin'

SynOptics is marching right along with plans to spur Asynchronous Transfer Mode (ATM) networking. The company's ATM product manager told *Computerworld* recently that products will "soon" emerge for its ATM switch, due in the third quarter, that allow users to run ATM at lower-than-specified speeds, such as T3 (45M bit/sec.). SynOptics also said the switch will gain a Sonet interface in the fourth quarter and that its under-development Sbus adapter for linking Sun SPARCstations into an ATM network will cost less than $1,000 and will off-load all of the communications process from the SPARC.

Like father, like son

Word is that IBM's massive staff reduction (see story page 4) will also be felt by Big Blue's 13,000-strong outsourcing subsidiary, ISSC. The unit reportedly will make significant payroll cuts in an attempt to lower services costs by one-third. An ISSC spokesman disputed that explanation, saying the unit would pare staff to accommodate cuts at its largest client, IBM.

The Javelin Center was jammed with 26,843 attendees for PC Expo, which featured the natural high-intensity product [illegible] guilt of any trade show. The usual rash of [illegible] and sights bending the wonders of vendors, [illegible] networking, it was just a [illegible] gain and [illegible] watching Company [illegible] and finding state-[illegible] staff members were [illegible] Please, [illegible] Ortega Computerworld [illegible]

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